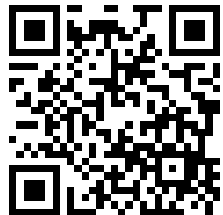

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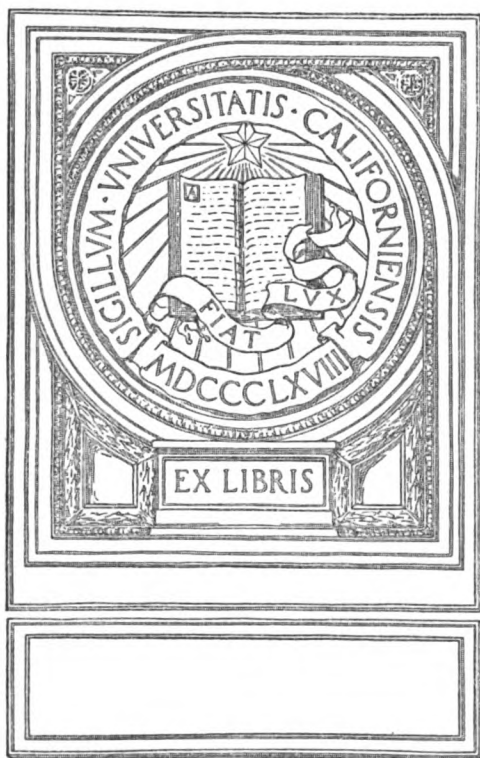
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HANDBOOK

OF THE

GERMAN ARMY IN WAR.
JANUARY, 1917.

J. H. Burt
ISSUED BY THE GENERAL STAFF.

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Ch. Brit.
ISSUED BY THE "GENERAL STAFF."

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HANDBOOK OF THE GERMAN ARMY IN WAR. JANUARY, 1917.

CHAPTER I.

RECRUITING AND RECRUIT TRAINING.

1. **Liability to serve.**—Under the laws obtaining prior to the outbreak of the present war, every male German was liable to military service from the close of his 17th to the end of his 45th year.

Although not liable in peace to service in the Active Army until his 20th year, every German, on reaching the age of 17, automatically became liable to serve in the *Landsturm*, i.e., the category intended primarily for home defence. Every man belonged to the *Landsturm 1st Ban* between the ages of 17 and 20.

2. **Recruiting in peace.**—In peace, liability to service in the *Active Army* commenced when a man had reached the age of 20, and consisted of 2 years' Active colour-service (3 years in the cavalry and horse artillery), followed by successive periods in the *Reserve* (4 or 5 years), *Landwehr* (11 years), and *Landsturm 2nd Ban* (7 years). All men passed to the *Landsturm 2nd Ban* on the 1st of April in the year on which they reached the age of 39.

After completing his period of colour-service in the Active Army, a man was, in peace, liable to be called out for two annual trainings while in the Reserve, and after passing to the *Landwehr 2nd Ban* was free from further service.

3. **Annual enrolment.**—The annual recruit contingent, or "Class (*Jahrgang* or *Jahresklasse*)," comprises all men who attain their 20th birthday during the year in question.

In peace the preliminary enrolment or mustering (*Musterung*) of the annual recruit contingent took place each Spring.

All men who would attain their 20th birthday in that year were then mustered for medical examination. At this muster they were classified and disposed of as follows:—

	Normal percentage of Class.
(1.) Fit and required for military service: posted to a regiment	50
(2.) Fit but not required: posted to the Ersatz Reserve	15
(3.) Unfit for active service: posted to <i>Landsturm 1st Ban</i>	} 25
(4.) Temporarily unfit for service: classified as <i>Restanten</i> and put back for re-examination the following year	
(5.) Totally unfit for service: classified as " <i>Dauernd-untaugliche</i> " and excused military service	10

Men on the *Reservisten-Liste*, after having been put back at three successive musters, were finally released from their obligation to serve, and posted to the Untrained Landsturm.

The actual calling up of the annual Class, i.e., its assembly in the dépôts, took place on the 1st October in each year.

In the years preceding the war the annual Class produced the following totals:—

1911	..	..	..	..	..	..	..	563,024
1912	..	..	..	..	..	..	..	587,608
1913	..	..	..	..	..	..	..	587,888

For the years 1914–1919 a gross total of 650,000 may be assumed for each annual Class.

4. The Ersatz Reserve.—In peace, the annual contingent necessary to maintain the Army and Navy was about 240,000 men.

As the annual Class was greatly in excess of this figure, even after the weeding out of the unfits, a certain number of men (87,000 in 1912) were turned over each year to the *Ersatz Reserve* (Supplementary Reserve).

The Ersatz Reserve was made up of—

- (a.) Men fit for active service, but excused for family or economic reasons, and
- (b.) Men with minor physical defects.

These men remained in the Ersatz Reserve for 12 years, during which time they were liable to be called up for three annual trainings. Only a small proportion of the Ersatz Reserve underwent training.

After passing 12 years in the Ersatz Reserve, the trained men were transferred to the Landwehr 2nd Ban, while the untrained men were transferred to the Landsturm 1st Ban.

On mobilization, the Ersatz Reserve amounted to a total of about 900,000 men, aged between 20 and 32.

5. One-year Volunteers.—In peace, young men of good education who undertook to clothe, feed and equip themselves during their period of service, and who attained a satisfactory standard of proficiency in their duties, were permitted to transfer to the Reserve as “aspirant officers” at the end of one year’s service only. After undergoing two annual trainings with the Reserve, and passing a military examination, they were graded as Reserve Officers.

These men were known as “One-year Volunteers” (*Einfährig-freiwillige*), and wore an edging of twisted coloured cord on their shoulder straps as a distinguishing mark.

6. Categories.—The following diagram shows the categories of the different Classes liable to service on mobilization in July, 1914:—

Year of birth.	Forming the class of	Men fit for service.	Men fit for service, but not required.	Men unfit for war service.	
1897	1917	Landsturm,	1st Ban.	Landsturm, 1st Ban. (untrained).	
1896	1916				
1895	1915				
1894	1914				
1893	1913	Active.	Ersatz Reserve (only a small number trained).		
1892	1912				
1891	1911	Reserve .. .			
1890	1910				
1889	1909				
1888	1908				
1887	1907	Landwehr, 1st Ban. ..			
1886	1906				
1885	1905				
1884	1904				
1883	1903	Landwehr, 2nd Ban.	Trained men in Landwehr 2nd Ban.		
1882	1902		Untrained men in Landsturm 1st Ban.		
1881	1901				
1880	1900				
1879	1899	Landsturm,	2nd Ban.	Landsturm, 2nd Ban.	
1878	1898				
1877	1897				
1876	1896				
1875	1895				
1874	1894				
1873	1893				
1872	1892				
1871	1891				
1870	1890				
1869	1889				

7. **Recruiting in war.**—In war, the period of liability to be called up for military service is, as in peace time, between the ages of 17 and 45, with the following differences:—

- (1.) The annual Classes can be called up and sent to the front before reaching the age of 20.
- (2.) All transfers from one category to another (*i.e.*, from Reserve to Landwehr and from Landwehr to Landsturm) are suspended.
- (3.) Men are not released from service on reaching the age of 45.
- (4.) Men previously rejected as “permanently unfit” can be re-examined and called upon to serve. (Law of 9th September, 1915.)

The annual Class in each recruiting district (*Aushebungsbezirk*) is first of all “mustered” and medically examined by a recruiting board (*Ersatz-Kommission*).

The recruits are then classified as follows :—

- (1.) *Kriegsverwendungsfähige* (= fit for active service).
- (2.) *Garnisondienstfähige* (= fit for garrison duty in Germany, on the Lines of Communication, or in the field).
- (3.) *Arbeitsverwendungsfähige* (= fit for labour employment).
- (4.) *Dauernd-untaugliche* (= permanently unfit).

When a Class is called up, the recruits of Category (1) are at once sent to the dépôts of field units; the recruits of Categories (2) and (3) are sent to Landsturm formations (*see* Chapter XIII.).

The "*Dauernd-untaugliche*," although temporarily excused service, are always liable to be re-examined; if then considered fit they are posted to a dépôt.

8. War Volunteers.—During the war, a certain number of young men, between the ages of 17 and 20, have been allowed to volunteer for active service before the calling up of their Class. These men are known as war-volunteers (*Kriegsfreiwillige*).

Probably about 5 per cent. of each Class anticipates its calling up by volunteering.

9. Stages of recruiting during the war.—The accompanying diagram shows the stages of recruiting since the beginning of the war.

The **Reserve, Landwehr** and **Ersatz Reserve** were practically all absorbed by the expansion of the army which took place on or shortly after mobilization.

The **1914 Class** was called up about the time when it was normally due (end of September, 1914), but its calling up was spread over a period of 3 months, as the dépôts were full of Ersatz Reservists. It was sent to the front after 3 or 4 months' training.

The **Landsturm** was then extensively drawn on to make good the losses of the winter campaign, and the Landsturm classes, called up in successive batches, continued to supply drafts until the close of 1915, when the last of the 2nd Ban was exhausted.

Meanwhile, the **1915 Class** had been called up during the months of April, May and June, 1915, followed by the **1916 Class** between August and November of the same year. The 1915 Class was sent to the front after 4 months' training, the 1916 Class after an average of 4 to 5 months' training.

The heavy fighting of the summer and autumn of 1915 had proved such a heavy drain on Germany's man-power that drastic measures had to be adopted in the autumn of that year to tap fresh resources.

The men who had been previously rejected as "**permanently unfit**" for service were re-examined under more stringent conditions. As this source provided only indifferent material, the next resort was to "**comb out**" labour, first agricultural, and finally industrial. Even munition factories were called upon to provide their quota.

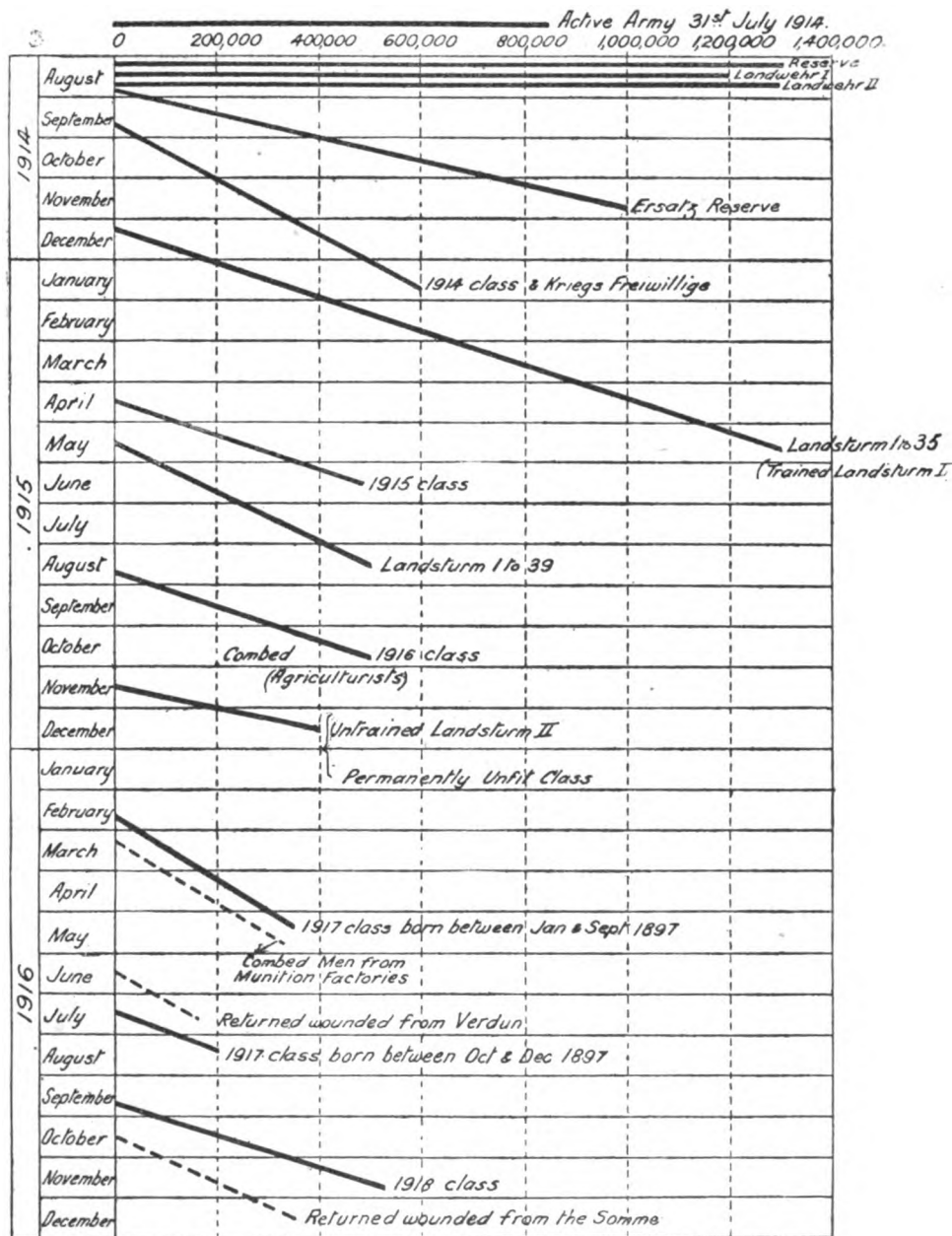
The **1917 Class** was called up between January and May, 1916, *i.e.*, over 18 months in advance of its normal time. This class was rapidly exhausted owing to the heavy losses at Verdun and on the Somme. Part of the 1917 Class was sent to the front after only 3 months' training.

The calling up of the **1918 Class** took place in October, 1916, exactly 2 years before it was due.

The calling up of the **1919 Class** commenced in January, 1917.

10. Territorial Recruiting Organization.—The German recruiting system is based mainly on the territorial organization of the Empire; the Army Corps is the unit for purposes of recruiting and administration.

STAGES OF RECRUITING DURING THE WAR.



The German Empire is divided in 24 Army Corps Districts, in each of which a complete Army Corps is, in peace, stationed and recruited, except in the case of the XV. and XVI. Army Corps, stationed in Alsace-Lorraine, which are recruited from other parts of the Empire. The Prussian Guard Corps was stationed in Berlin in peace, but was recruited from the whole of Prussia and from Alsace-Lorraine.

In peace, each of these Army Corps districts was divided into 4 or 5 brigade districts, each subdivided into 2 Landwehr districts (*Landwehr-Bezirke*); each *Landwehr-Bezirke* had a small permanent staff for recruiting and mobilization.

11. The Army Corps Districts.—The 24 Army Corps Districts* are as follows.—

Army Corps.	Area.	Principal towns.
I.	East Prussia	Königsberg , Memel, Tilsit, Insterburg.
II.	Pomerania	Stettin , Stralsund, Swinemünde, Bromberg.
III.	Brandenburg	Berlin , Brandenburg, Frankfurt a/O, Cottbus.
IV.	Prussian Saxony	Magdeburg , Halle a/S, Halberstadt, Iorgau.
V.	Lower Silesia	Posen , Liegnitz, Görlitz, Glogau.
VI.	Silesia	Breslau , Glatz, Gleiwitz, Neisse.
VII.	Westphalia	Münster , Wesel, Düsseldorf, Crefeld.
VIII.	Rhineland	Coblenz , Köln, Aachen, Trier, Bonn.
IX.	Schleswig-Holstein	Altona , Hamburg, Bremen, Lübeck.
X.	Hanover	Hannover , Braunschweig, Oldenburg, Osnabrück.
XI.	Thuringia and Nassau	Cassel , Erfurt, Gotha, Weimar.
XII.	Eastern Saxony	Dresden , Bautzen, Pirna, Zittau.
XIII.	Württemberg	Stuttgart , Ulm, Ludwigsburg, Tübingen.
XIV.	Baden	Karlsruhe , Mannheim, Freiburg i/B., Heidelberg.
XV.	Alsace	Strassburg , Colmar, Zabern, Neu-Breisach.
XVI.	Western Lorraine	Metz , Diedenhofen, Saarlouis, St. Avold.
XVII.	West Prussia	Danzig , Graudenz, Thorn, Marienwerder.
XVIII.	Hesse	Frankfurt a/M. , Mainz, Darmstadt, Wiesbaden.
XIX.	Western Saxony	Leipzig , Chemnitz, Döbeln, Zwickau.
XX.	South-east Prussia	Allenstein , Braunsberg, Elbing, Lyck.
XXI.	Eastern Lorraine	Saarbrücken , Saargemünd: Hagenau, Bitsch.
I. Bav.	Southern Bavaria	München , Augsburg, Kempten, Passau.
II. Bav.	Lower Franconia and Palatinate	Würzburg , Bamberg, Kaiserslautern, Landau.
III. Bav.	Northern Bavaria	Nürnberg , Amberg, Bayreuth, Regensburg.

The towns printed in heavy type are the headquarters of Army Corps Districts

In war, the peace headquarters of each Army Corps are known as *stellvertretende Generalkommandos* (acting Army Corps Headquarters).

12. Contingents furnished by the different States of the Empire.—Although organization, equipment and training are practically homogeneous throughout the whole of the German Army, the four Sovereign States have each their own army and separate Ministry of War. The Bavarian Army is the one which varies most from the Prussian model.

Officers of the Bavarian and Saxon Armies are on separate lists for promotion.

* See map at the end (Plate 1).

The contingents furnished by the different States are fixed by law in the following ratio:—

									Per cent.
Prussia and the smaller States..	..	..	..	..	..	..	..	..	78
Bavaria ..	..	..	..	..	..	..	..	..	11
Saxony ..	..	..	..	..	..	..	..	..	7
Württemberg ..	..	..	..	..	..	..	..	..	4
									<hr/> 100 <hr/>

This proportion has not altered during the war, and corresponds almost exactly to the relative populations of the four Sovereign States.

In peace, the Bavarian Army consisted of three Army Corps, namely, the I., II. and III. Bavarian Corps. Bavarian units, from Army Corps downwards, are numbered separately from the units of the Prussian Army. Saxon and Württemberg units conform to the Prussian numerical series. The Saxon Army consisted in peace of two Army Corps, the XII. and XIX., and the Württemberg Army of one, the XIII. Corps.

The remaining States of the Empire do not furnish separate contingents, but are merged in the Prussian Army.

Rheders and Alsace-Lorrainers are mixed in the formations raised in the XIV. Corps District. A certain number of Alsace-Lorrainers are to be found in the formations raised in the XIV., XV., XVI. and XXI. Corps Districts, but they are scattered for the most part in other units, mainly on the Russian front. The XVI. and XXI. Corps (Lorraine) are principally recruited in Westphalia and Rhineland.

The Polish population of the Duchy of Posen is distributed over the Silesian and Vistula provinces (V. and VI. Corps Districts). There are also large colonies of Polish labourers in the mining and industrial regions of Westphalia and Rhineland, so that Poles are numerous in units recruited from the VII. and VIII. Corps Districts.

13. The Dépôt system.—In peace, each Army Corps District provided the machinery necessary for recruiting, equipping and training:—

- 2 Infantry Divisions,
- 2 Cavalry Brigades, and
- The necessary proportion of technical troops.

On mobilization, each infantry, cavalry and artillery regiment left behind at its peace station a dépôt to provide it with reinforcements during the campaign. In the case of the different arms these dépôts are known as follows:—

- **Ersatz-Bataillon* For each infantry and foot artillery regiment, and for each *Jäger* and pioneer battalion.
- Ersatz-Eskadron* For each cavalry regiment.
- Ersatz-Abteilung* For each field artillery regiment.

The majority of infantry regiments now have two Ersatz battalions.

* Care should be taken to avoid confusing the various meanings of the word "*Ersatz*." In its original sense it means "Supplement" or "Reinforcement." It was applied to the pre-war recruiting category "*Ersatz Reserve*" in this sense, and was also used to denote the dépôt units in Germany. The word *Ersatz* is also prefixed to a certain number of field units (regiments, brigades and Divisions) which have been formed by the dépôts during the war.

In addition to supplying their affiliated field units with drafts, each of these dépôts also serves as a nucleus for the formation of new units.

The new units formed during or since mobilization are similarly provided with dépôts.

Normally each dépôt only provides drafts for its affiliated field unit, but on emergency it sometimes happens that men trained in the dépôt of one regiment are sent as reinforcements to another regiment, occasionally even to a regiment belonging to another Corps District.

14. Organization of regimental dépôts.—Each Active infantry regiment has normally two dépôts (*Ersatz* battalions) situated at different places in its Corps District in Germany. Reserve and Landwehr infantry regiments have usually only one dépôt battalion each.

A normal dépôt battalion comprises—

3 or 4 *Ersatz* companies.

1 convalescent company (*Genesende-Kompagnie* or *Genesungs-Kompagnie*).

1 company of men fit for garrison duty (*Garnisondienstfähige*).

. 1 or 2 “recruit dépôts” (*Rekruten-Depots*).

The strength and composition of dépôt battalions vary from time to time according to recruiting requirements and the resources available, but the strength is usually from 1,000 to 1,200.

Untrained men on joining are posted to the “recruit dépôt” which is, on an average, 400 strong and divided into 4 sections (*Züge* or *Abteilungen*). After a preliminary course of training the recruits are posted to the *Ersatz* companies and are then ready to be sent as drafts to the field recruit dépôts behind the front. The *Ersatz* companies are 100–200 strong.

In some cases recruits pass directly from the “recruit dépôt” to the field recruit dépôt, the *Ersatz* companies being filled with recovered wounded (*hergestellte*) and combed men (*reklamirte*) who have already had some training.

The men of the “convalescent company” and “garrison-duty company” are kept at light duty. Their progress is closely watched and they are subjected to frequent medical examinations. As soon as they are passed as fit they are transferred to the *Ersatz* companies.

The dépôt battalions of Landwehr regiments are organized in a similar manner, but they are made up of older men of a considerably lower physical standard.

15. Field Recruit Dépôts.—Up to the beginning of 1915, recruits enrolled in the German Army went direct from their Regimental Dépôt in Germany to join their units at the front. Since the month of February, 1915, recruits of all categories, after a training varying in length from 1 to 3 months, have been sent to Field Recruit Dépôts (*Feld-Rekruten-Depots*) behind the front. The Field Recruit Dépôt is a kind of training camp where the recruits’ training is completed; from these dépôts the recruits are sent to the front as required. Returned wounded also pass through the Field Recruit Dépôts in order to learn the latest methods of trench fighting. During the Somme battle, recruits were often passed hurriedly through the Field Recruit Dépôts after only 2 or 3 weeks’ training.

The Field Recruit Dépôts are generally attached to a Division, or sometimes to a Corps, to which they act as an advanced reserve of personnel. Being situated only

a few miles from the front, these dépôts can quickly send up the necessary reinforcements in the event of severe losses being sustained; they can also, during periods of quiet, receive from the front men whose military training has proved to be insufficient.

The Field Recruit Dépôts form units which can be employed, if the necessity arises, on work behind the front, and they have occasionally been used in front line in quiet sectors.

On the Somme, a recruit battalion employed on the construction of rear defences actually became engaged in the battle.

As the Field Recruit Dépôts follow the formations to which they are attached, in the event of their moving from one sector to another, it is probable that there is a system of exchange between the cadres of the regiments at the front and those of the Field Recruit Dépôts, so that officers and non-commissioned officers, temporarily unfit for service in the trenches, can be employed for instructional purposes at the dépôt.

The fact that the Field Recruit Dépôts act as a reserve of personnel causes their effective strength to vary from time to time; on an average, however, they seem to consist of a battalion per Division, composed of from four to six companies of 200 men each.

The recruits generally arrive at the Field Recruit Dépôt in a combined draft from the home dépôts of all the regiments of the Division. Sometimes, however, the Field Recruit Dépôt receives elements from a district other than that from which it normally draws recruits.

The reinforcements from the Field Recruit Dépôts are distributed as required among the regiments which have gaps to fill; cases have occurred of reinforcements being sent from the Field Recruit Dépôt of one Division to regiments belonging to another Division at the front, and even from a Field Recruit Dépôt on the Western Front to a unit in Russia.

16. Training Centres.—As the dépôts are for the most part in towns and thickly populated districts where training facilities are restricted, a number of training grounds (*Truppen-Übungs-Plätze*) existed in peace for carrying out combined training. These training grounds were situated at:—

Döberitz (III).	Königsbrück (XII).
Jüterbog (III).	Zeithain (XII).
Zossen (III).	Münsingen (XIII).
Altengrabow (IV).	Heuberg (XIV).
Neuhammer (V).	Oberhofen (XIV).
Warthe (V).	Gruppe (XVII).
Lamsdorf (VI).	Hammerstein (XVII).
Friedrichsfeld (VII).	Darmstadt (XVIII).
Senne (VII).	Orb (XVIII).
Elsenborn (VIII).	Arys (XX).
Lockstedt (IX).	Bitsch (XXI).
Munster (X).	Lechfeld (I. Bav.)
Ohrdruf (XI).	Hammelburg (II. Bav.)
	Grafenwühr (III. Bav.)

At most of these training grounds large permanent camps have been instituted during the war, *e.g.*, Senne-Lager, Munster-Lager and Warthe-Lager. The new Divisions created during the war have generally been formed and trained in these camps.

Besides the training camps in Germany, two very large training centres have been formed in the occupied territories, namely at Beverloo (east of Antwerp) and at Warsaw. The training centres at Beverloo and Warsaw act as reservoirs for the supply of drafts to the Western and Eastern Fronts respectively. Each has a permanent establishment known as an *Infanterie-Ersatz-Truppe*.

The *Infanterie-Ersatz-Truppe* at Beverloo consists of 11 battalions; that at Warsaw of 4 battalions.

Recruits are sent from these camps as required, either direct to units in the field or to the Field Recruit Depôts.

CHAPTER II.

OFFICERS AND NON-COMMISSIONED OFFICERS.

1 Combatant officers.—In peace, the German corps of officers formed a distinct class or caste in social life. The appointment and promotion of officers remained a royal prerogative, and the holding of a combatant commission carried with it many material privileges in addition to a distinct social status.

At the same time the standard of professional efficiency was maintained at a very high level. Promotion to higher command or appointment to the General Staff was carefully restricted to those who were efficient in every sense.

Although the system of a social caste possessed advantages in peace time, partly in ensuring the supply of officers, partly in maintaining the strict disciplinary standard of the German Army, it had to give way in war to more democratic relations. The rigid barriers which separated the German officer from his men have disappeared. The enormous wastage of war has caused a corresponding decrease in the standard of professional efficiency. Consequently, the confidence placed in their officers by the rank and file has diminished to a certain extent.

2. Technical officers.—In addition to the corps of officers belonging to the combatant arms, there are other classes of officers employed in connection with various technical services, namely :—

- Medical officers (*Sanitätsoffiziere*).
- Veterinary officers (*Veterinäroffiziere*).
- Ordnance and artificer officers (*Zeug- und Feuerwerksoffiziere*).
- Fortress-construction officers (*Festungsbauoffiziere*).

These officers are graded on a scale corresponding to the ranks of combatant officers.

3. Military officials.—There is also an important branch of military officials (*Militärbeamten*) in charge of administrative services. They are divided into upper (*obere*) and lower (*untere*) classes. The former class rank as officers.

The upper class includes—

- Chaplains (*Militärgeistlichen*).
- Judge-Advocates (*Kriegs-Gerichts-Räte*).
- Paymasters (*Zahlmeister*).
- Intendants (*Intendantur-Räte*).

4. **Grades of combatant officers.**—The grades of combatant officers in the German Army are as follows:—

(a.) **General officers** (*Generalität*).—

<i>General-Feldmarschall</i>	..	..	..	..	Commands a Group of Armies.
<i>General-Oberst</i>	..	..	..	..	Commands an Army.
<i>General der</i> { <i>Infanterie*</i> <i>Kavallerie*</i> <i>Artillerie*</i> }	Commands a Corps.
<i>General-Leutnant</i>	..	..	..	..	Commands a Division.
<i>General-Major</i>	..	..	..	..	Commands a Brigade.

(b.) **Regimental officers.**—

† <i>Oberst</i> (Colonel)	..	..	..	..	Commands a regiment.
† <i>Oberst leutnant</i> (Lt.-Col.)	..	..	..	..	Second-in-command of a regiment.
† <i>Major</i>	..	..	..	..	Commands a battalion.
{ <i>Hauptmann</i>	..	..	..	..	Captain of Infantry, Artillery and Engineers
{ <i>Rittmeister</i>	..	..	..	..	Captain of Cavalry and Train.
<i>Oberleutnant</i>	..	..	..	..	Lieutenant.
<i>Leutnant</i>	..	..	..	..	2nd Lieutenant.
{ <i>Feldwebel-Leutnant</i>	..	..	..	..	Serjeant-Major Lieutenant.
{ <i>Offizier-Stellvertreter</i>	..	..	..	..	Acting officer.

5. **Promotion and seniority of officers.**—The promotion of officers is the prerogative of the Sovereigns of the four kingdoms of Prussia, Bavaria, Saxony and Württemberg. The first principle of promotion is that the officer promoted is thoroughly fitted in every respect for his new position. Even in peace this was determined by inspection and not by examination.

Except on the General Staff, promotion up to the rank of Captain or Major takes place within the regiment. Above the rank of Major promotion takes place throughout the Army.

Promotion was slow in peace according to our standard, but is now, naturally, more rapid. The following table shows the average age at which officers reach the various ranks in peace and war respectively, on the assumption that an officer is first commissioned at the age of 20:—

										Peace.	War.
Lieutenant	..	..	..	..	..	..	..	..	..	29	25
Captain	..	..	..	..	..	..	..	..	..	36	33½
Major	..	..	..	..	..	..	..	..	..	45½	39½
Lieut.-Colonel	..	..	..	..	..	..	..	..	..	52	45
Colonel	..	..	..	..	..	..	..	..	..	54½	48
Major-General (Brigade Commander)	..	..	..	..	..	..	..	..	..	58	51
Lieut.-General (Divisional Commander)	..	..	..	..	..	..	..	..	..	61	55
General (Corps Commander)	..	..	..	..	..	..	..	..	..	65½	59

* Denotes the arm of the service to which he belongs. A pioneer officer who rises to General's rank is "General der Infanterie."

† Field officers are known as "Stabsoffiziere."

At present the average age of Divisional Commanders is 58, and that of Corps Commanders is 62.

Accelerated promotion is given to General Staff Officers in the ranks of Lieutenant and Captain; in peace, they reach the general list of Majors about 6 years ahead of contemporary regimental officers. In war, the promotion of General Staff Officers is also accelerated. For instance, a number of General Staff Officers who became Captains in March, 1912, were promoted to the rank of Major in December, 1916, thus gaining nearly 2 years' seniority over the regimental officers of the same service.

The names, ranks and appointments of officers are given in the annual Army List (*Rangliste*). The Bavarian and Saxon Armies have separate Army Lists.

A separate Seniority List (*Dienstaltersliste*) is also published, giving the date of promotion to each rank.

Promotions, appointments and transfers are published under the heading of *Personal-Veränderungen* in the Official Gazette (*Reichsanzeiger*).

An Officer's Commission (*Patent*) is issued by the Emperor through the Military Cabinet. When an officer is confirmed in his rank he is said to be "*patentiert*." When he receives brevet-rank he is said to be "*charakterisiert*."

6. Grades of Medical Officers (*Sanitätsoffiziere*).—The grades of medical officers, who are assimilated in rank to combatant officers, but have no combatant titles, are as follows:—

Grade.		Corresponding rank.
<i>Generalstabsarzt (und Sanitätsinspekteur)</i>	..	Lieutenant-General.
<i>Obergeneralarzt (with an Army)</i>	.. ..	Major-General.
<i>Generalarzt (with a Corps)</i>	.. ..	Colonel.
<i>Generaloberarzt (with a Division)</i>	.. ..	Lieut.-Colonel.
<i>Oberstabsarzt (with a regiment)</i>	.. ..	Major.
<i>Stabsarzt</i> }	(with a battalion)	{ Captain.
<i>Oberarzt</i> }		{ Lieutenant.
<i>Assistenzarzt</i>	.. ..	2nd Lieutenant.

7. Reserve and Landwehr officers.—Reserve and Landwehr officers are drawn from two sources:—

- (a.) Officers who have retired from the Active Army with less than 18 years' service pass into the Reserve or Landwehr according to their age.
- (b.) In peace, one-year volunteers, after passing a special examination during their year's service, are transferred to the Reserve as "*Offizier-Aspiranten*." After undergoing two annual trainings, passing another examination, and being suitably reported on, they obtain a commission either in the Reserve or the Landwehr. If in the former, they are liable to be called out for three annual trainings of 4 to 8 weeks.

In war, a special course at a War School takes the place of the year in the ranks. (See paragraph 10.)

In 1913 the Army Lists contained the names of 23,000 Reserve officers and 11,000 Landwehr officers.

Officers of the Reserve or Landwehr have the words "*der Reserve*," "*der Landwehr*," after their rank—thus: "*Hauptmann der Reserve*," "*Oberleutnant der Landwehr*."

Officers who are definitely retired are described as "*ausser Dienst*" (*a.D.*). Officers who have retired after 18 years' service may at their own request be placed *zur Disposition* (*z.D.*), that is, on the unemployed list; they are then liable to be called up for service on mobilization.

8. Grades of non-commissioned officers.—The principal grades of non-commissioned officers are as follows:—

<i>Feldwebel</i>	=	Company serjeant-major.
<i>Wachtmeister</i>	=	Battery or squadron serjeant-major.
<i>Vizefeldwebel</i>	}	Deputy-serjeant-major of infantry, foot artillery or engineers.
<i>Vizewachtmeister</i>		
	=	Deputy-serjeant-major of cavalry, field artillery or train.

The above non-commissioned officers are entitled to wear a sword knot, and are classed as *Portepeeträger*.

<i>Unteroffizier</i>	=	Corporal.
<i>Oberjäger</i>	=	Corporal in <i>Jäger</i> battalions.
<i>Obergefreiter</i>	=	Bombardier.
<i>Gefreiter</i>	=	Acting-bombardier or lance-corporal.

There is no rank exactly corresponding to the British serjeant or lance-serjeant, but the status of an *Unteroffizier* resembles that of a serjeant in the British Army.

9. Recruitment of Officers.—The recruitment of the corps of officers is assured by the following methods:—

- (a.) Appointment of cadets (*Kadetten*) from one of the 11 cadet schools.
- (b.) Promotion of probationers (*Fahnenjunker*), who join the ranks as candidates for a commission.
- (c.) Promotion of non-commissioned officers (in war only) to temporary rank.

The procedure in each of these cases is briefly described below.

(a.) **Cadets.**—The Central Cadet Institution (*Haupt-Kadetten-Anstalt*) is at Gross-Lichterfelde, near Berlin. The other 10 cadet schools are at—

Köslin (II. Corps).
 Potsdam (Guard Corps).
 Wahlstatt (V. Corps).
 Bensberg (VIII. Corps).
 Plön (IX. Corps).
 Naumburg a/S. (IV. Corps).
 Karlsruhe (XIV. Corps).
 Oranienstein (XVIII. Corps).
 München (I. Bav. Corps).
 Dresden (XII. Corps).

After a course of $2\frac{1}{2}$ years at a cadet school (*Kadettenhaus*) the cadet undergoes his ensign's examination (*Führichsprüfung*). The cadets who pass out highest are posted at once to a regiment as 2nd Lieutenants. The remainder are given the rank of Ensign (*Fähnrich*) and undergo a 9 months' course of military training at a War School (*Kriegs-Schule*), of which there are at least eleven. They are then posted to a unit as 2nd Lieutenants "temporarily without a commission" (*vorläufig ohne Patent*), and after being approved of by their brother officers are finally granted a commission.

(b.) **Probationers.**—In peace, a young man who had passed through the senior class at school, or who had undergone the ensign's examination mentioned above, joined a unit as a candidate for a commission (*Fahnenjunker*). After 3 months' service he was usually promoted to the rank of Corporal. After six months he obtained a certificate from the officers of his unit to the effect that he was suitable, and was then given the rank of Ensign and sent to a War School.

The above method has been somewhat modified during the war. The candidate for a commission is termed an "*Offizier-Aspirant*"; he goes through a course of training for 2 or 3 months, either in Germany or at a special school of instruction behind the front; after serving with a unit in the field as *Vizefeldwebel* or *Feldwebel*, he is promoted to the rank of *Leutnant der Reserve*. From two to ten *Offizier-Aspiranten* may be nominated at one time by a regiment. Particulars of the course of training are given in paragraph 10.

(c.) **Promotion of non-commissioned officers.**—In peace, provision was made for the promotion of a certain number of senior non-commissioned officers as acting officers on mobilization, receiving the grade of *Feldwebel-Leutnant* (Serjeant-Major Lieutenant).

The orders issued during the war with regard to *Feldwebel-Leutnants* are as follows:—

"In all arms, vacancies in the establishment of 2nd Lieutenants may be filled by promoting *Feldwebel* or *Vizefeldwebel*, who had retired before the war after 12 years' service, to the rank of *Feldwebel-Leutnant*, provided they are of good character and have held a suitable position in civil life.

"Similarly, non-commissioned officers of good character who had retired with 8 years' service may be promoted to the rank of *Feldwebel-Leutnant* in Landsturm formations, provided they are not fit for active service."

Another type of acting officer has been created during the war, namely the *Offizier-Stellvertreter* (Acting officer). Acting officers of this grade never obtain a higher command than that of a platoon. Although treated as officers in the field, they are not entitled to the privileges of permanent commissioned rank. On demobilization, or discharge during the war, *Offizier-Stellvertreter* revert at once to the rank of *Feldwebel* or *Vizefeldwebel*. An *Offizier-Stellvertreter* can be promoted to the rank of *Feldwebel-Leutnant*.

10. The training of aspirant officers in war.—Courses of instruction for *Offizier-Aspiranten* are held at all the big training centres in Germany and behind the front (see page 16).

The course lasts for 2 or 3 months. Each School of Instruction has from 1,600 to 2,000 pupils, who are formed into a regiment of four battalions, each of four companies. Each company, which comprises about 100 pupils, is divided into three platoons.

The school is commanded by a lieutenant-colonel, who is usually a Staff College graduate (*Kriegs-Akademiker*). The battalions are commanded by majors of the Active Army; the companies are commanded by wounded or convalescent captains and subalterns.

The discipline at these schools is very strict; pupils are frequently returned to their units for misdemeanours or incompetence.

The instruction given is both theoretical and practical. The following programme is typical of the subjects taught:—

(A.) *Theoretical.*—Lectures on tactics by an Active officer serving with a unit. Twice a week the pupils are given a tactical problem to solve on the ground, using the 1:100,000 map, and executing sketches to illustrate their work.

The duties of an officer ; his relations to his men, to his comrades, to his superiors, to civilians, &c., code of honour. Discipline.

Short examination daily in duties in the field. Musketry and drill.

(B.) *Practical*.—Every morning the pupils carry out a tactical exercise on different ground with a skeleton enemy formed by one or two platoons. Nearly every pupil is called upon to command a platoon or a company. Casualties are practised.

Handling and practice with grenades and trench-mortars.

Construction of shelters and dug-outs. Bridging exercise.

Physical training.

At the conclusion of the course an examination is held consisting of—

Battalion drill.

Oral test. Inspection by the Commandant.

Written test. Writing reports.

11. Recruitment and training of non-commissioned officers.—In peace, non-commissioned officers were given a thorough general and military education, and their prospects in civil life after leaving the Army were assured. Under the German system of peace training, the duties and responsibilities of non-commissioned officers conduced to develop their initiative and self-reliance.

Non commissioned officers are drawn from two sources --

(a.) Training schools for non-commissioned officers.

(b.) The ranks

In peace, about 25 per cent. were drawn from training schools and the remainder were promoted directly from the ranks.

(a.) **The training schools.**—The training schools are of two kinds—

(1.) N.C.O.'s Preparatory Schools (*Unteroffizier-Vorschulen*).

(2.) N.C.O.'s Schools (*Unteroffizier-Schulen*).

In the **N.C.O.'s Preparatory Schools** the education is of a general character and great attention is paid to physical development. The age of admission is from 14½ to 17. The course lasts for 2 years.

There are nine N.C.O.'s Preparatory Schools, at Annaburg (IV), Bartenstein (I), Frankenstein (VI), Jülich (VIII), Mülln (IX), Sigmaringen (XIV), Weilburg (XVIII), Wohlau (VI) and Marienberg (Saxony).

On leaving the preparatory schools, the pupils join the **N.C.O.'s Schools**, of which there are eight, at Marienwerder (XVII), Northeim (X), Potsdam (Guard), Treptow a/R. (II), Weissenfels (IV), Wetzlar (XVIII), Fürstenfeldbrück (Bavaria) and Marienberg (Saxony).

The age of admission to these schools is between 17 and 20. The training is free and the course is a purely military one. In peace the course lasted 2 years.

On leaving the schools the pupils are posted to regiments as *Unteroffiziere*.

(b.) **From the ranks.**—The majority of non-commissioned officers are drawn from the ranks. In peace they were selected during their Active colour service, and invited to re-engage (*kapitulieren*). They were given special instruction and were promoted, generally, at the end of 2 years' service.

In war, likely men are picked out by their commanding officers and sent for a course of training, either in the Divisional or Corps Field Recruit Depôts, or in special non-commissioned officers' training courses (*Unteroffizier-Lehr-Kursen*), which are held in each Army.

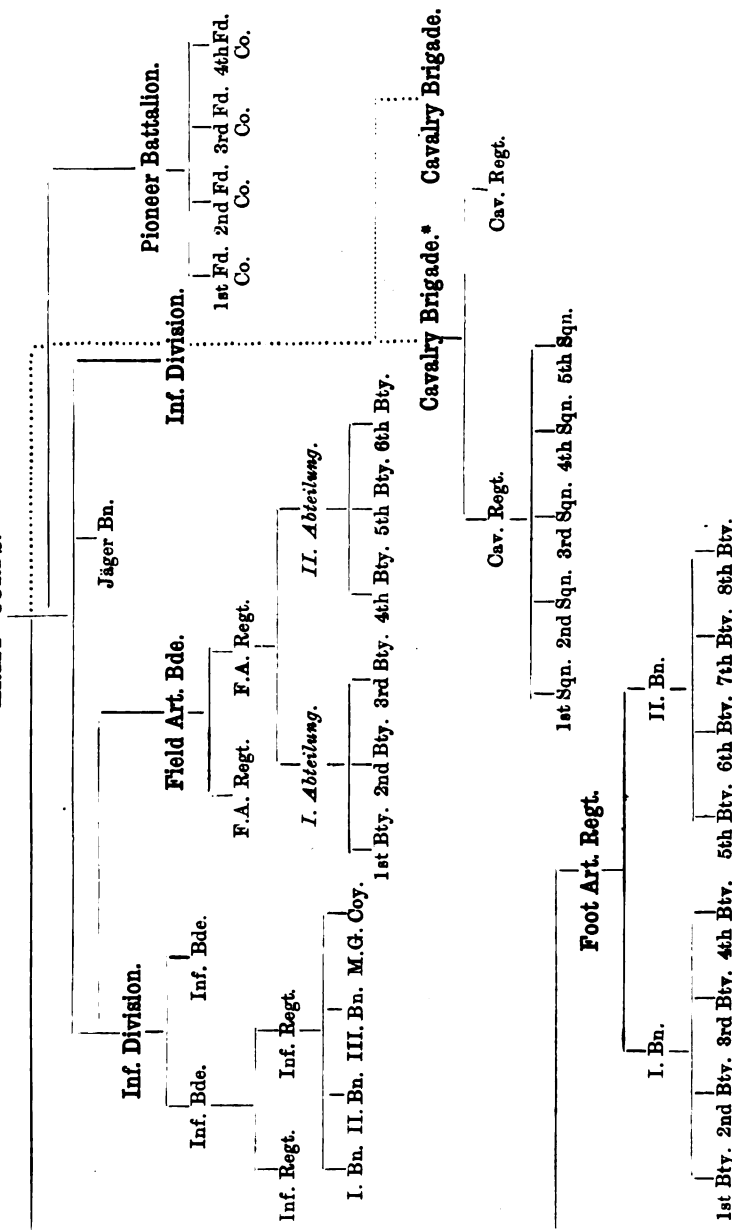
In some Corps, each regiment has an instructional company (*Lehr-Kompagnie*) in which suitable candidates for promotion are trained.

A considerable number of men from the cavalry have been promoted during the war to non-commissioned rank in infantry units.

THE MOBILIZATION AND EXPANSION OF THE GERMAN ARMY.

PEACE ORGANIZATION OF AN ARMY CORPS.

ARMY CORPS.



* The Cavalry brigades were administered by the Army Corps in the district of which they were formed, though not forming an integral part of the Army Corps.

In addition to the above combatant arms, the Army Corps comprised a Train Detachment (*Train-Abteilung*), an Administrative Department (*Militär-Intendantur*), a Clothing Office (*Bekleidungs-Amt*), and a Medical Office (*Sanitäts-Amt*).

1. The Army Corps in peace.—The 25 Army Corps, which have served as the basis for expansion in war, formed the framework of the German Army organization in peace.

The diagram on page 25 shows in outline the peace organization of an Army Corps.

Each Army Corps formed a complete and self-supporting entity in the German Army. As regards command, the Army Corps Commander was absolutely independent in his own district, and took his orders direct from the Emperor (or King in the Bavarian Army). He was responsible for the *tactical* training of all troops in his command, although the responsibility for the *technical* training of the individual arms and branches rested with the various Inspector-Generals. The Army Corps Commander was also allowed considerable latitude as regards administrative and financial matters. This decentralization of command and responsibility was one of the main factors in the rapidity with which the German Army mobilized, and greatly facilitated its expansion during the war.

2. The expansion of the German Army.—The peace strength of the standing or Active German Army in 1914 amounted in round numbers to 840,000 of all ranks.

At the end of 1916, the total strength of the German Army had risen to about 5,500,000 men, excluding recruits training in Germany.

The various arms comprised the following number of units in July, 1914, and December, 1916, respectively :—

	July, 1914.	December, 1916.
Infantry battalions	669	2,200
Cavalry squadrons	550	550
Field artillery batteries	642	2,150
Foot artillery batteries	400	1,950
Pioneer companies	150	600

Thus in $2\frac{1}{2}$ years of war the various arms had increased in the following proportions :—

Infantry	$3\frac{1}{2}$ times.
Field artillery	$3\frac{1}{2}$ „
Heavy artillery	5 „
Pioneers	4 „

The strength of the cavalry has remained stationary, as most of the cavalry units formed since mobilization have been dismounted.

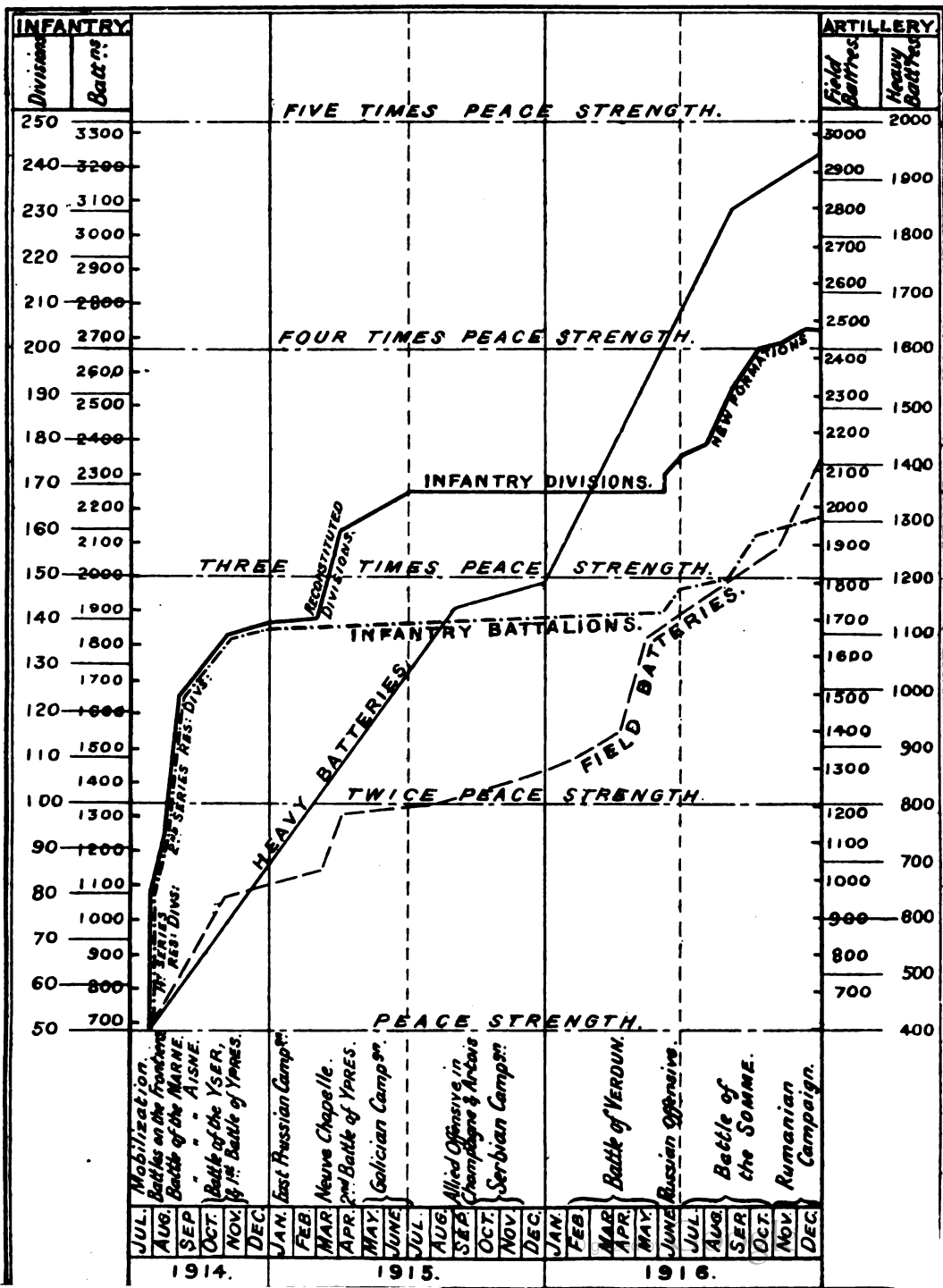
The accompanying diagram shows graphically the progress of this expansion as regards the infantry and artillery. The most striking increase has been that of the heavy artillery.

It is noteworthy that, although the number of Infantry Divisions has increased more than four times, the number of battalions has only increased $3\frac{1}{2}$ times. This disparity originated in the spring of 1915, when the establishment of Divisions began to be reduced from four to three regiments.

3. The machinery of expansion.—As seen in Chapter I., paragraph 13, the dépôts (Ersatz battalions, &c.) fulfil a twofold rôle :—

- (a.) The supply of drafts to the field units, and
- (b.) The creation of new formations.

EXPANSION OF THE GERMAN ARMY UP TO DEC. 1916.



As each **Ersatz battalion** (squadron or *Abteilung*) is provided with one or two "Recruit Depôts" for the elementary training of recruits, the Ersatz battalion itself consists largely of trained, or at any rate partially trained, men. Every Ersatz battalion is, therefore, a potential new unit which may eventually take the field, and has in many cases done so.

At the beginning of the war, in the majority of infantry brigades, one company was formed in each depôt of each Active regiment from the best elements that were surplus to the immediate needs of mobilization. These companies were combined to form a **Brigade Ersatz Battalion** which bore the number of the brigade in which it was formed. In the same way a number of **Landwehr Brigade Ersatz Battalions** were formed later on in the depôts of Landwehr regiments. These Brigade Ersatz Battalions were grouped together to form Ersatz brigades which were eventually regrouped as infantry regiments. The infantry regiments formed in this way were incorporated in the Ersatz Divisions which took the field during the winter of 1914-1915, or even earlier.

Instead of merely acting as the parent stock of new formations as described above, the Ersatz battalions themselves in many cases took the field as mobile units. These "Mobile Ersatz battalions" were combined to complete the series of infantry regiments, numbered from 349 to 381.

The new infantry regiments formed in the autumn of 1916, and numbered between 383 and 480, were formed in various ways:—

- (1.) In a number of Army Corps Districts each Ersatz battalion raised a company at war strength, composed of men fit for field service. These companies were combined to form new infantry regiments (*e.g.*, the 411th and 412th Infantry Regiments formed in the X. Corps District).
- (2.) In a number of Divisions in the field a complete company was withdrawn from every infantry regiment. The vacancies in the regiments drawn upon were filled by drafts from the depôts, and the companies withdrawn were combined to form new regiments (*e.g.*, the 392nd Infantry Regiment formed from the regiments of the XIX. and XII. Res. Corps, and the 393rd formed from the 7th Div., 8th Div., 12th Div., and 50th Res. Div.).
- (3.) In certain Field Recruit Depôts and training centres new regiments were organized from the fittest Landsturm and Landwehr men picked out of Landsturm battalions on the Lines of Communications, or from the garrison battalions in Germany. These new units were stiffened with a proportion of returned wounded, but their fighting value was not high and they were sent to quiet sectors of the front (*e.g.*, the 384th and 386th Landwehr Infantry Regiments).

New units of the other arms were usually created by the first of these methods, *e.g.*, the 263rd F.A. Regiment was formed by combining the Ersatz batteries raised in the depôts of all the field artillery regiments in the I. and XX. Corps Districts.

4. **Mobilization and the process of expansion in 1914.**—On mobilization in July, 1914, the **50 Active Divisions** were brought up to War Establishment with reservists, and the extra Guard Regiments formed a 3rd Guard Division.*

In addition to these 51 Active Divisions **32 Reserve Divisions** were formed from the surplus reservists in the depôts of 16 Army Corps Districts, and also from the Landwehr 1st Ban. Some Active Corps had in peace a surplus infantry brigade or regiment which served to stiffen the Reserve Divisions. The Reserve Corps, which were numbered

* The instructional battalion of the Guard Corps was expanded into the *Lehr-Regiment*.

correspondingly to the Active Corps, took the field simultaneously with them. They were organized similarly to the Active Corps, except that a Reserve Division was only provided with 9 field artillery batteries instead of with 12.

At the same time, a number of **Landwehr and Ersatz Brigades** were formed from the Landwehr 2nd Bau and from the trained Ersatz reservists available. These formations were at first used only on the Lines of Communication of the advancing armies.

As the Ersatz Reserve still provided a large surplus of man-power, it was decided soon after the outbreak of war to increase the number of Army Corps. About the middle of October, 1914, six fresh Corps and an extra Bavarian Reserve Division (*i.e.*, 13 Divisions), together with a Naval Division, left the depôts for the front.

These 13 Divisions formed the **first series of New-Formation Reserve Divisions** formed *after* mobilization had been completed. These Reserve Divisions were numbered between 43 and 54, and formed the Reserve Corps numbered between XXII and XXVII; the 6th Bavarian Reserve Division also belongs to this series. The new Corps consisted of Landwehr men, Ersatz reservists and a large number of volunteers from the classes not previously called up.

The depôts in Germany were then filled up with the 1914 Class, the remaining Ersatz reservists and additional volunteers. Owing to the large number of men put back from the classes of previous years, the incorporation of the 1914 Class afforded an opportunity for still further increasing the army in the field, and in February, 1915, four fresh Reserve Corps and another Bavarian Reserve Division (*i.e.*, nine Divisions) had been sent to the front. These nine Divisions made up the **second series of New-Formation Reserve Divisions**, numbered between 75 and 82, forming the Reserve Corps numbered between XXXVIII and XLI; the 8th Bavarian Reserve Division also belongs to this series. At the same time, the Naval Division had been expanded to a Corps, and some additional Landwehr brigades had been formed.

Thus in February, 1915, the German forces in the field had risen to:—

51	Active Divisions.			
32	Reserve Divisions	formed	on	mobilization.
13	"	"	"	in October, 1914.
9	"	"	"	in February, 1915,

a total of 105 Active and Reserve Divisions, and the equivalent of 38 Landwehr, Ersatz and additional Divisions.

5. Formation of the Reconstituted Divisions in 1915.—In the spring of 1915, the prospect of offensive operations in Russia during the summer necessitated a further increase in the number of mobile field units.

The winter campaign had, however, exhausted the 1914 Class and practically the whole of the trained Landsturm, so that there were not sufficient trained men in the depôts to form new regiments.

The increasing importance of artillery, and the frequent Divisional reliefs occasioned by the conditions of trench warfare, made possible a reduction in the infantry strength of the Division.

Thus, 21 new Divisions were raised in March and April, 1915, which were organized on a 3-regiment instead of a 4-regiment basis. Their formation involved the creation of no new infantry units, but was effected by grouping together three existing infantry regiments withdrawn from three Active or Reserve Divisions. In this way a certain number of Active and Reserve Divisions were also reduced from 4 to 3 infantry regiments.

The reduction in the Divisional establishment had the additional advantage of setting free an infantry brigade staff in each Division so reduced; in this manner a number of trained staffs were obtained for the 21 new Divisions reconstituted by the process described above.

The field artillery of the series of reconstituted Divisions was obtained by a general reduction of all the existing field batteries from 6 to 4 guns. The Divisional artillery of these Divisions consisted of from 9 to 12 field batteries.

In June, 1915, four new independent infantry brigades were formed on the Western Front by the creation of new infantry regiments. These brigades were numbered 183, 185, 187 and 192; they consisted of three infantry regiments and were as strong in infantry as the reconstituted Divisions. When first formed, presumably because only three field batteries were available for each, these units were classified as brigades; a year later they received their full artillery complement and were raised to the status of Divisions.

6. New Formations raised in 1916.—Beyond a steady increase in the formation of artillery and technical units, no noteworthy expansion of the German Army took place between June, 1915, and June, 1916.

At the latter date the strain on the Eastern Front caused by the Russian offensive, together with the prospective lengthening of the line involved by the imminent entry into the war of Rumania, necessitated a further increase in the number of mobile field units.

Between 1st June and 31st December, 1916, a further series of 34 new Divisions was raised. Some of these (series 195–200) were formed by grouping together *Jäger* battalions and odd battalions withdrawn from existing Divisions, but the great majority of them (series numbered over 200) were reconstituted with the fourth regiments of Active and Reserve Divisions, similarly to the Reconstituted Divisions formed in the spring of 1915.

At the same time, the number of battalions in the German Army was increased by the formation of between 60 and 70 new infantry regiments. In a few cases the new Divisions (201st to 205th Divisions, 19th and 20th Landwehr Divisions and 12th Bavarian Division) were composed entirely of these new infantry regiments. In general, however, the new infantry regiments were sent to Active or Reserve Divisions to replace the old regiments withdrawn to make up the new Divisions.

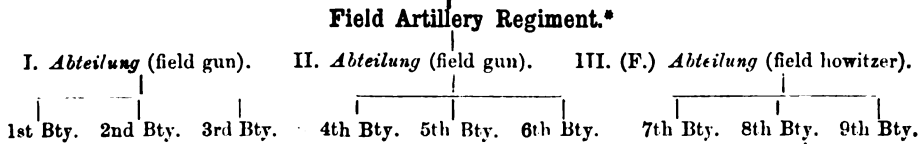
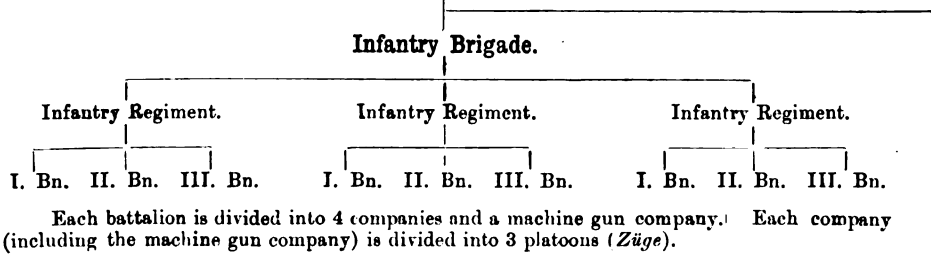
7. Organization of an Infantry Division in war.—Before the war the Army Corps was the tactical as well as the administrative unit of the German Army. Under the conditions of the present war, where Divisions are constantly being relieved and interchanged, the Corps has not proved a suitable tactical unit, and, in the German Army, as in other armies, the *Division* is now the unit of tactical manoeuvre, i.e., the smallest self-contained formation of all arms. At the same time, the mobility of the Division has been increased by reducing the proportion of infantry (see paragraph 5 above).

From the Spring of 1915 onwards, the new Divisions raised have been independent of a Corps formation (*fliegende Divisionen*), and no new Corps have been formed. At the end of 1916 there was only one Corps staff for every four Divisions in the field, and in many cases even the Active Divisions had been entirely dissociated from their original Corps staffs.

A few Divisions still retain the original peace organization, viz., two infantry brigades each of two infantry regiments, but the great majority of German Divisions have now been organized on the 3-regiment basis, the three infantry regiments (9 battalions) being grouped under one infantry brigade staff.

Divisions still vary considerably in their composition, but the following may be taken as the normal organization of a German Division :—

DIVISIONAL HEADQUARTERS.



Divisional Mounted Troops.

- 1 or 2 Squadrons.
- 1 Cyclist Company.

Divisional Engineers.

- 2 Field Companies.
- 1 Bridging Train.
- 1 Telephone Detachment.
- 1 Searchlight Section.

Divisional Machine Gun Unit.

- 1 Machine Gun Marksman Detachment (18 machine guns).

Trench Mortar Unit.

- 1 *Minenwerfer* Company (16 or 18 trench mortars).

Bearer Company.

2 Divisional Train Echelons. (*Staffel.*)

- 2 Infantry Ammunition Columns.
- 3 Artillery Ammunition Columns.
- Mechanical Transport Column.
- 2 or 3 Field Hospitals.
- Remount Depot.
- Bakery Column.

* Some Divisions have 2 field artillery regiments, each of 6 batteries (*see* page 60).

CHAPTER IV.

COMMAND AND STAFFS.

1. **The German Military System.**—The general military system of the German Army falls broadly under three headings, which are kept quite separate :—

Appointments, under the Chief of the Military Cabinet.

Administration, under the Minister of War.

General Staff, under the Chief of the General Staff.

The three officers* above mentioned are the highest military authorities and act as personal advisers to the Emperor, who is the supreme head of the Army.

2. **The Military Cabinet** (*Militär-Kabinett*) issues the official gazette and Cabinet orders, and controls all appointments, promotions, transfers, exchanges, retirements, honours and rewards, except for the posting of General Staff officers.

The Chief of the Military Cabinet is senior personal aide-de-camp and military secretary to the Emperor, and is practically his ear and mouthpiece.

3. **Ministry of War** (*Kriegs-Ministerium*).—Each of the four Sovereign States of the Empire has its own Ministry of War, but, in war, authority is entirely centred in the Prussian Ministry of War, while those of the other States merely arrange local details. Only the Prussian Ministry of War will therefore be dealt with in this chapter.

The Minister of War is appointed by the Emperor, and is the highest *administrative* authority in the German Army, but exercises no *military command* over the troops in the field.†

Lieut.-General Wild von Hohenborn, who held this appointment during the first part of the war, was replaced in October, 1916, by General von Stein, who commanded the XIV. Reserve Corps on the Somme. The Minister of War is assisted by a Chief of the Acting General Staff (*Chef des stellvertretenden Generalstabes*).

The Ministry of War, which in peace comprised six departments, now consists of eight :—

I.—Central Department. (*Zentral-Departement, ZD.*)

- (a.) Ministerial Section. (Z1.)
- (b.) Estimates and Establishments Section. (Z2.)
- (c.) Intelligence Section. (Z3.)
- (d.) Central Information Bureau. (NB.)

II.—General War Department. (*Allgemeines Kriegs-Departement, AD.*)

- (a.) Army Section. (A1.)
- (b.) Supply of Officers and Non-commissioned Officers Section (C 1a).
- (c.) Infantry Section. (A2.)
- (d.) Cavalry Section. (A3.)

* The names of the officers holding these appointments are given in the Index to "The German Forces in the Field," as are also the names of the higher commanders mentioned on page 34.

† The Minister of War, however, directly controls the Home Army (*Heimatsheer*).

- (e.) Field Artillery Section. (A4.)
- (f.) Foot Artillery Section. (A5.)
- (g.) Engineer and Pioneer Section. (A6.)
- (h.) Communication Section. (A7V.)
- (i.) Air Section. (A7L.)
- (k.) Chemical Section. (A10.)

III.—**Army Administration Department.** (*Armee-Verwaltungs-Departement, BD.*)

- (a.) War Supply Section. (B1.)
- (b.) Peace Supply Section. (B2.)
- (c.) Clothing Section. (B3.)
- (d.) Finance Section. (B4.)
- (e.) Central Depot for captured War Material (ZK.)

IV.—**Quartermaster Department.** (*Unterkunfts-Departement, UD.*)

- (a.) Quartermaster Section, Eastern Front. (U1.)
- (b.) Quartermaster Section, Eastern Front. (U2.)
- (c.) Training Grounds Section. (U3.)
- (d.) Works Section. (U4.)
- (e.) Section for the Protection of German Prisoners of War and for Breaches of International Law. (U5.)
- (f.) Section for Rationing Prisoners of War. (U6.)
- (g.) War Quartermaster Section. (UK.)

V.—**Pensions and Justice Department.** (*Versorgungs- und Justiz-Departement, CD.*)

- (a.) Pensions Section. (C2P.)
- (b.) Annuity Section. (C2R.)
- (c.) Assistance Section for Officers and Men. (C3F.)
- (d.) Assistance Section for Soldiers' Dependents. (C3V.)
- (e.) Justice Section. (C4.)

VI.—**Remount Inspection.** (*Remonte-Inspektion, RI.*)

VII.—**Medical Section.** (*Medizinal-Abteilung, MA.*) comprising a central depot for personal effects (ZN).

VIII.—**War Bureau.** (*Kriegs-Amt, K.*)

- (a.) War Recruiting and Labour Department. (ED)—

- (1.) War Recruiting Office. (C 1b.)
- (2.) War Labour Office. (AZS.)

- (b.) Munitions Supply Office (*Wumha*), which has absorbed the Department of the Master of Ordnance (F2), and the Manufactories Section of the Ministry of War (B5)

- (c.) War Raw Materials Section (KRA), combined with a Purchase Section for Requisitioned Textiles (Ab.W).
- (d.) Exports and Imports Section. (A8.)
- (e.) National Food Supply Section. (B6.)

The new departments formed in the War Ministry during the war are No. IV. (Quartering) and No. VIII. (War Bureau).

The **War Bureau** is the department which is charged with exploiting to the full the resources of the country for war. It was created in October, 1916, when the Ministry of War and General Staff were reorganized, and its five branches, mentioned above, deal with the subjects enumerated below :—

- (a.) The *War Recruiting and Labour Department* has three reporting offices (*Referate*) connected with parliamentary business and Press propaganda.

There are also six reporting offices for agriculture, mining, steel and machinery, chemistry, armament firms, and exemptions. Besides these there are five sections dealing with the various sources of labour, namely, women, prisoners of war and enemy aliens, allied and neutral aliens, civilians between 17 and 60 available under the Auxiliary Service Act, skilled mechanics withdrawn from the army, and soldiers not yet called up.

- (b.) The *Munitions Supply Office* is divided into four main sections :—

Central Section.

Inspection of Technical Artillery Establishments.

Inspection of Artillery Depôts.

Inspection of Technical Infantry Establishments. This branch also inspects the engineer and other depôts.

- (c.) The *War Raw Materials Section* is divided into 19 sections and deals with explosives, leather, metals, wood, wool, fibre, silk, rags, textiles, rubber, cotton and other raw materials.
- (d.) The *Exports and Imports Section* deals with statistical questions, and the policy connected with imports, exports and special contracts.
- (e.) The *National Food Supply Section* operates in conjunction with the War Food Department.

Connected with the War Bureau is a “scientific commission” of 20 leading scientists, who form a technical advisory board; there are also legal and financial experts, and special sections for economic propaganda work in neutral countries and among the troops, and for distributing information among the manufacturers of war supplies.

4. The General Staff.—The Staff consists of :—

- (a.) The General Staff (*Generalstab*), including the *Adjutantur*.
- (b.) The Great General Staff (*Grosser Generalstab*).

The **General Staff** supplies officers for the whole Army.

With few exceptions, every staff officer has undergone a course of three years' training at the Staff College (*Kriegs-Akademie*), and has been attached to the Great General Staff, before taking up an appointment on the staff of a Corps or Division.

The *Adjutantur*, i.e., the Administrative or Routine Staff, consisted in peace mainly of Staff College graduates who had not been selected for appointment to the General Staff. *Adjutantur* officers hold 2nd grade appointments on the staffs of Corps, Divisions, and Brigades.

The **Great General Staff** is an inner ring of selected staff officers working in Berlin and at General Headquarters, directly under the Chief of the General Staff. Its work comprises everything which comes under the heading of Operations, Movements and Intelligence.

5. General Headquarters.—General Headquarters (*Grosses Hauptquartier*) remain permanently on the Western Front,* and all orders and gazettes concerning the Field Army are issued from there, with the exception of administrative and technical orders, which emanate from the Ministry of War.

The General Staff at General Headquarters is divided into sections (*Abteilungen*), each under an *Abteilungschef*, who is usually a Major or Lieutenant-Colonel.

At General Headquarters there is also the General Officer Commanding the Air Forces (*Kommandierender General der Luftstreitkräfte*), and a number of Directors, who act as technical advisers to the Chief of the General Staff of the Field Army. Among these are the following :—

- Director of Foot Artillery (*Chef der Fussartillerie*).
- Director of Engineer and Pioneer Services (*Chef des Ingenieur- und Pionier-Wesens*).
- Director of Signals (*Chef des Feldtelegraphenwesens*).
- Director of Railways (*Chef des Feldeisenbahnwesens*).
- † Director of Ammunition (*Chef des Feldmunitionswesens*).
- Inspector of Anti-Aircraft Guns (*Inspekteur der Flug-Abwehr-Kanonen*).
- Director of Mechanical Transport (*Chef des Kraftfahrwesens*).
- Director of Medical Services (*Chef des Feldsanitätswesens*).

6. The Higher Command.—The supreme command of the Field Army is vested in the Emperor as *Oberkommandierender Kriegsherr*. The Emperor's principal adviser with regard to all military operations is the Chief of the General Staff of the Field Army (*Chef des Generalstabes des Feldheeres*).

Early in 1915, General v. Moltke was succeeded as Chief of the General Staff by Lieut.-General Erich von Falkenhayn. He was, in turn, succeeded by Field-Marshal von Hindenburg in August, 1916. Under the Chief of the General Staff is the *Erster Oberquartiermeister*,‡ who acts as Deputy Chief of the General Staff.

The Emperor nominally retains the personal command of the main Groups of Armies operating on the Western Front.

The higher command in the Eastern Theatre is delegated to the Commander-in-Chief on the Eastern Front (*Oberbefehlshaber Ost*), and to the Commander-in-Chief in the South-Eastern Theatre.

The forces operating on the Russian Front are formed in two German Groups of Armies and one Austrian Group of Armies.

The South-Eastern Group of Armies includes the Army Group operating on the Macedonian Front.

* At Charleville up to March, 1917.

† There is a second Director of Ammunition for the Eastern Front.

‡ The *Oberquartiermeister* is a Senior Staff Officer.

A Group of Armies (*Heeresgruppe*) consists of two to five Armies, and is commanded by a Field-Marshal or *General-Oberst*.

7. Composition and Staff of an Army.—An Army (*Armee*) consists of three to six corps, but this varies considerably on different sectors of the front. The average number of Divisions in an Army is 12 on the Western and nine on the Eastern Front. An Army is usually commanded by a *General-Oberst*.

The forces operating in Lorraine and Alsace are grouped in Army-Detachments (*Armee-Abteilungen*) each of four—six divisions.

The Staff of an Army in the Field is divided into four sections, under the Chief of the General Staff of the Army, as follows:—

Section I.—General Staff.—Consisting of General Staff officers. It is divided into the following sub-sections:—

I(a).—Operations, orders, order of battle, tactics, training.

I(b).—Areas, movements, traffic regulations, road control, salvage.

I(c).—Intelligence, air service, signals.

*I(d).—Ammunition supply (artillery and infantry).

Section II.—Administrative Staff.—Consisting of one General Staff officer and several *Adjutantur* officers. It is divided into—

II(a).—Personnel, promotions, honours and rewards, leave, chaplains, lectures, regimental newspapers, supply, transport, clothing, boots, captured material.

II(b).—Organization, establishments, strengths, returns, billeting, replacing of guns, ammunition and horses, contre-espionage and censorship, graves registration, railway service.

II(c).—Interior economy, routine orders, returns.

Section III.—Military Law, under the Judge-Advocate (*Kriegsgerichtsrat*).
Provost-Marshal's duties, discipline, court-martials.

Section IV.—Intendance, medical and veterinary services, staffed by military officials, medical and veterinary officers.

IV(a).—Administrative details, rations, clothing, pay, allowances, requisitions, food-prices, local contributions, post office, dealings with civilians.

IV(b).—Medical services, anti-gas measures.

IV(c).—Veterinary services.

Sections I(d), II, III and IV are directly subordinate to the *Oberquartiermeister* of the Army, but the work of all the sections is co-ordinated under the Chief of the General Staff.

In addition to the General and Administrative Staffs, there are various other technical advisers and directors at the Headquarters of each Army:—

General of Artillery.

General of Pioneers.

Staff Officer for Aircraft Troops (*Stabsoffizier der Luftstreitkräfte*).

* This section is also controlled by the *Oberquartiermeister*.

Staff Officer for Machine guns (*Stabsoffizier der M.G. Truppen*).

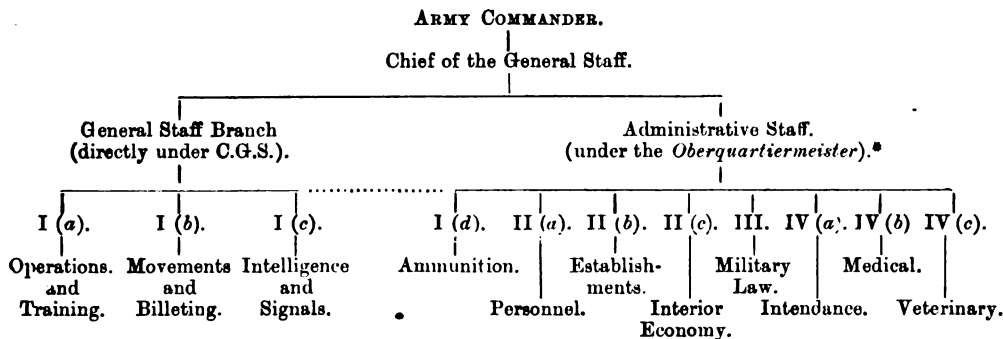
Intelligence Officer (*Nachrichten-Offizier*)—sometimes included in I(c).

Gas Officer (*Stabs-Offizier-Gas*)—sometimes included in IV(b).

There are also a number of attached officers, such as camp commandant, chaplain, &c.

The above gives a typical distribution of duties at the Headquarters of a German Army, but the details differ somewhat in the different Armies, and the functions of some of the sections have not yet been clearly established.

Organization of the Staff of a German Army.



Attached to the Staff.

General of Artillery.
 General of Pioneers.
 Staff Officer for Aircraft Troops.
 Staff Officer for Machine Guns.
 Intelligence Officer.
 Gas Officer.
 Officer in charge of Signals.
 Officer in charge of Wireless.
 Survey Department.
 Officer in charge of Anti-aircraft Guns.
 Officer in charge of Mechanical Transport.

8. The Staff of a Corps and Division.—The organization of a Corps Staff is similar to that of an Army Staff as given above, and is divided into the same sections, I, II, III and IV. There are, however, no Staff officers specially charged with the supervision of aircraft or machine guns.

The staff of a Division is, naturally, much smaller than that of an Army or Corps; the system is similar in principle but less complicated in detail. The Divisional Staff consists of one General Staff Officer (Major or Captain), and three *Adjutantur* officers (Captains or Lieutenants).

* The *Oberquartiermeister* is a senior General Staff Officer.

The following officers are usually attached to Divisional Headquarters :—

Officer in charge of Headquarters Section, Divisional Train.
 Camp Commandant.
 Assistant Provost Marshal.
 Supply Officer.
 Medical Officer.
 Assistant Medical Officer.
 Anti-gas Officer (*Gas-Schutz-Officier*).
 Protestant Chaplain.
 Roman Catholic Chaplain.
 Officer in charge of Postal Service.

9. The Chain of Command in the Field.—The Army Corps of two Divisions which, in peace, formed the unit of higher command, has not proved a suitable formation under war conditions. The unit of tactical manœuvre has become the Division, and the Divisions have in many cases become entirely independent of their original Corps grouping. Corps staffs in some cases remain permanently in a sector after the Divisions composing the Corps have been transferred elsewhere. In the field, three or four Divisions are frequently grouped under one Corps staff.

During the Somme battle, when Divisions had to be relieved frequently, semi-permanent "Groups" were formed in the First and Second Armies. Each Group hold a definite sector of the front with two, three or four Divisions in line. These Groups were similar to our Corps.

In an Infantry Division, the chain of command has been considerably simplified by the re-organization of the Division on a three-regiment basis.

The Divisional Commander issues his orders to :—

- (a.) the Infantry Brigade Commander
- (b.) the Divisional Artillery Commander,

who respectively command all the infantry and artillery units operating in the divisional sector.

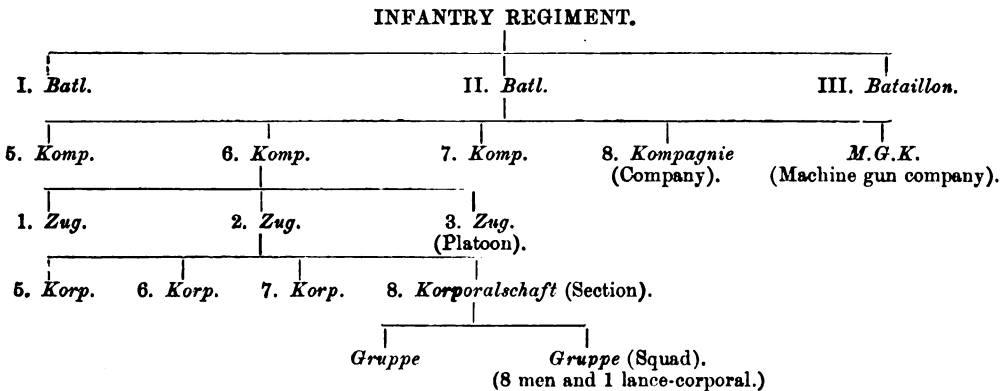
CHAPTER V.

INFANTRY.

1. Infantry organization.—The German infantry is organized in regiments of three battalions. A few regiments have a 4th battalion, but this is exceptional. As stated in Chapter III., a Division comprises three and sometimes four infantry regiments; a few independent infantry brigades exist, each of two infantry regiments.

There are still some independent battalions, such as *Jäger*, *Schützen*, ski and mountain battalions, but the tendency has been to combine all independent battalions into regiments. During 1916, most of the *Jäger* battalions were combined to form *Jäger* regiments.

2. Organization of an infantry regiment.—



The above diagram shows the chain of command in an infantry regiment. The three battalions of the regiment are numbered I., II. and III. Each battalion consists of four companies and a machine gun company; the companies are numbered from 1 to 12 throughout the regiment. A company is organized in three platoons, numbered 1, 2, 3 in each company. Each platoon (*Zug*) is divided into four sections,* numbered from 1 to 12 throughout the company. The smallest subdivision is the squad (*Gruppe*) of 8 men and a lance-corporal.

Each company has four stretcher bearers (*Krankenträger*).

The organization of a machine gun company is given on page 50.

* The *Korporschaft* is an administrative, not a tactical unit.

The various units are nominally commanded as follows:—

Regiment by a colonel (*Oberst*), with a Lieut.-Col. (*Oberst leutnant*) as second-in-command.
 Battalion by a major (*Major*).
 Company „ captain (*Hauptmann*).
 Platoon „ lieutenant (*Oberleutnant*) or 2nd lieut. (*Leutnant*).
 Section „ corporal (*Unteroffizier*).
 Squad „ lance-corporal (*Gefreiter*).

In practice, a regiment is now usually commanded by a major, a battalion by a captain and a company by a subaltern.

The war establishment (excluding machine gun companies) are shown in the following table:—

— .	Officers.	Medical officers and paymasters.	Other ranks.	Horses.	Vehicles.
Company	5	..	259	10	4
Battalion	23*	3	1,050	59	19
Regiment	73	10	3,204	193	59
Regimental Staff	4†	1	54	16	2

3. **Transport.**—The transport of a regiment of 3 battalions at war establishment, exclusive of the machine gun companies, consists of 16 led horses, 58 two-horsed vehicles and 1 four-horsed vehicle and is organized thus:—

Transport of a Regiment.

1st Line Transport (*Gefechts-Bagage*)—

16 led horses (1 per company and 4 for regimental staff).
 12 small-arm ammunition wagons (1 per company).
 12 travelling kitchens (1 per company).
 3 infantry medical store wagons (1 per battalion).

Train † (*Grosse Bagage*)—

16 baggage wagons (1 per company, 1 per battalion staff and 1 for regimental staff).
 12 supply wagons (1 per company).
 3 sutlers' wagons (1 per battalion).
 1 tool wagon (four-horsed).

* Includes a supply officer (*Verpflegungs-Offizier*). † Includes a transport officer (*Bagage-Führer*).

‡ According to a captured document, a light 2-wheeled telephone cart has been added to the transport of an infantry regiment. It is not certain whether this is an authorized war establishment.

All infantry transport wagons are four-wheeled, drawn by two horses (except the tool wagon) and painted grey. They are driven from the box end, with the exception of the small-arm ammunition wagons and field kitchens, are made up of a body only, with a fore-carriage which locks under. The small-arm ammunition wagon is composed of two boxes, rigidly connected by futchells, and carries 14,400 rounds, or about 70 per rifle.

Transport of a Battalion.

(Without machine gun company).

1st Line Transport (*Gefechts-Bagage*)—

- 4 led horses.
- 4 company small-arm ammunition wagons.
- 4 travelling kitchens.
- 1 infantry medical store wagon.

Train (*Grosse Bagage*)—

- 1 baggage wagon for battalion headquarters.
- 4 company baggage wagons.
- 5 supply wagons (including 1 sutler's wagon).

Transport of a Company.

1st Line Transport (*Gefechts-Bagage*)—

- 1 led horse.
- 1 company small-arm ammunition wagon.
- 1 travelling kitchen.

Train (*Grosse Bagage*)—

- 1 company baggage wagon.
- 1 company supply wagon.

4. Regimental specialists.—The requirements of trench warfare have caused a number of specialist companies, detachments and sections to be attached to infantry regiments. Such units are:—

- Infantry Pioneer Company (*Infanterie-Pionier-Kompagnie*).
- Entrenching Company (*Bau-Kompagnie*)
- Tunnelling Company (*Stollenbau- or Berg-Kompagnie*).
- Concrete Construction Squad (*Betontrupp*).
- Labour Company (*Arbeits-Kompagnie*).

These units do not form part of the establishment of an infantry regiment; they are formed temporarily according to the requirements of the sector held. The men forming them are drawn from the battalions of the regiment, tradesmen and artificers being chosen as far as possible. These men are not struck off the strength of their units, and return to duty in the event of active operations.

5. Cyclist units.—Prior to mobilization, the only cyclist units in the German Army were the cyclist companies of *Jäger* battalions. Each of these battalions had one, and in some cases two cyclist companies.

During the war, a number of new cyclist companies have been formed, and, by the end of 1916, about 200 were in existence. The majority of the new Divisions formed during the war have been provided with Divisional Cyclist Companies, and a few of the Active Divisions are similarly provided. Some of the Cavalry Divisions are also provided with cyclist companies. The establishment of a cyclist company is four officers and 120 other ranks.

A certain number of cyclist companies have been grouped into cyclist battalions, of four companies each. These units first appeared in September, 1916, when five cyclist battalions were formed. Two of these battalions were formed on the Western Front, and took part in the Somme battle, but they were all transferred to Rumania in November, 1916, where the 1st, 2nd and 3rd Cyclist Battalions were grouped to form the 2nd Cyclist Brigade.

Cyclist battalions appear to be used as a mobile reserve, and are concentrated at points from which they can be moved up rapidly as reinforcements.

6. Mountain units.—In peace, a few *Jäger* battalions were trained annually in mountain and winter warfare. During the war, four Ski Battalions were formed in Bavaria, and one Ski Battalion in Württemberg.

The 1st, 2nd, 3rd and 4th Ski Battalions form the 3rd *Jäger* Regiment in the Alpine Corps. These battalions were formed in the spring of 1915, and were sent to the Trentino. They were afterwards employed in Serbia, and in the spring of 1916 were transferred to the Western Front, where they took part in the battle of Verdun. In the autumn of 1916 they went to the Carpathians.

The Württemberg Ski Battalion (*Württembergisches Gebirgs- und Schneeschuh-Bataillon*) fought in the Vosges until October, 1916, when it was transferred to Transylvania. It consists of six companies.

Mountain units wear a grey uniform with green facings and twisted cord on the shoulders similar to that worn by foresters. The stand and fall collar bears the letter "S" on either side. A mountaineering cap, similar to the Austrian one, is worn, with two cockades in front and an Edelweiss badge at the side. Ankle boots and puttees are worn.

7. Assault detachments.—A noteworthy feature of infantry organization has been the introduction of "Assault Detachments" (*Sturmtruppen*). These units consist of picked men whose initiative and skill in attack are developed by special training. Assault detachments were first used in the Verdun fighting, and the idea has since been largely developed.

During the latter part of 1916 an assault company (*Sturmkompanie*) was formed in a number of Divisions. An assault company usually consists of 1 officer and 120 men; the company is organized in 3 platoons, one of which is often attached to each regiment of the Division. These units are mainly employed in patrolling, and in carrying out trench raids and offensive operations.

In most of the Armies on the Western Front an assault battalion (*Sturmataillon*) has been formed. An assault battalion usually comprises—

- 4 Pioneer companies.
- Light gun detachment.
- Light trench mortar detachment.
- Light flame-projector detachment (*Kleif-Trupp*).
- Machine-gun section.
- Park company.

These assault battalions appear to form schools for training Divisional assault detachments.

8. **Armament.**—(a.) **General.**—The following table shows how infantry personnel are armed:—

Sword and '08 automatic pistol	..	..	Officers, medical officers, officials, serjeant-majors, ensigns, and vice-serjeant-majors.
Sword-bayonet	..	..	Drummers, buglers, bandsmen, officers' servants, and medical personnel.
Cavalry sword and '08 carbine	..	..	Transport drivers.
'98 rifle and sword-bayonet	..	..	Other ranks.

The 4 company stretcher bearers are armed with rifles, but do not take them into action.

(b.) **The rifle.**—The '98 pattern of rifle is on the Mauser system: calibre, .311-inch (7.9-mm.); weight, empty, without bayonet, 9 lbs. 3 ozs.; length, 48.6 inches; length of barrel, 29.65 inches; number of grooves, 4; width of groove, .153 inch; depth of groove, .0049 inch; twist of rifle, right-handed, 1 in 30.2 calibres (1 turn in 9.39 inches); maximum rate of fire obtainable, 35 to 40 rounds per minute.

The left side of the body is cut down flush with the bottom of the bolt recess and, therefore, level with the top of the magazine. This enables all the cartridges to be pushed into the magazine with the flat of the thumb, and avoids the necessity of pressing the last cartridge in the charger home with the point of the thumb.

The cartridges are held together by a grooved charger or strip (*fulzartiger Halter oder Ladestreifen*), which grips the bases only, and falls out when the breech is closed after the five cartridges have been put in. They, therefore, lie free in the magazine, and single cartridges can be put in at any time. There is no cut-off.

The cartridges are arranged in two vertical rows, one of three, the other of two rounds, close against each other, so that the magazine is small and entirely in the stock.

A certain number of detachable magazines (*Ansteckmagazin*) holding 25 cartridges have been issued with the object of providing an increased volume of fire. Rifles fitted with these magazines are awkward to handle, and are only suited for certain phases of trench warfare.

The extractor consists of a piece of spring steel extending a little more than half the length of the bolt. It is dovetailed on to a ring of steel which works in a cannellure near the fore-part of the bolt.

The platform is actuated by a "W"-shaped spring of ribbon steel. The bottom of the magazine dovetails into its seat and is secured by a stud and spring. It is easily removed for cleaning purposes.

The bolt is a single steel forging with no separate bolt-head. It is retained in the body by a stud on the left, and is removed by pulling out a hinged spring shutter to which the ejector is attached. The bolt is provided with an extra lug engaging in a recess in the cylindrical part of the rear end of the body. On the bolt is a small rib which acts as a

guide in withdrawing it. The rib lies underneath the extractor and supports it when the bolt is closed. The bolt can be stripped without tools.

The bands are secured by means of spring catches.

The rear end of the bolt is provided with a safety catch, which is manipulated by the thumb and forefinger from left to right, and can only be used when the mainspring is compressed.

The backsight consists of—

- (i.) The bed, which is graduated for 200 metres * and for every 50 metres from 300 to 2,000, and has a series of notches cut on either side. Those on the left side give the elevation for hundreds of metres, and those on the right for the intermediate fifties.
- (ii.) The sliding-piece, which is provided with spring clutches to engage in the notches, and a pointer.
- (iii.) The girder-shaped leaf, which is of unusual strength, and is supported by the sliding-piece.

The foresight is a barleycorn dovetailed into its block at right angles to the axis of the barrel.

The ordinary '98 pattern rifle is sometimes fitted with telescopic sights for use by snipers. Various patterns of periscopic sights have also been tried.

(c.) **Automatic pistol.**—The '83 pattern revolver has been replaced by the '08 automatic pistol.

This pistol takes eight cartridges, has a calibre of .354 inch (9 mm.) and weighs 1·8 lbs. (835 grammes). The length of its bore is 122 mm.

The length of the cartridge is 29 mm., weight 12·5 grammes, and weight of charge .35 grammes. The bullet has a blunted point and weighs 8 grammes.

The maximum range is 1,640 yards, and the velocity at 40 feet from the muzzle is 984 f.s.

(d.) **Sword-bayonet.**—The latest pattern (Mark 98/05) sword-bayonet used with the '98 rifle is 20·9 (531 mm.) long.

The weight of the bayonet and scabbard is 1 lb. 8½ ozs. (·7 kg.); that of the bayonet alone is 1 lb. 2 ozs. (·515 kg.).

9. **Ammunition.**—"S" ammunition has been adopted for the '98 pattern rifle. The bullet is pointed in shape, and is, therefore, known as the "S" bullet, from the German word *Spitz*.

It is 1·10 inches (28 mm.) in length, and tapers down to a diameter of only .05 inch (1·25 mm.) at the point, so that only .3 inch of the bullet touches the bore of the rifle.

The bullet is made of lead, with an envelope of steel coated with cupro-nickel, and is slightly cupped at the base with the figures 32 stamped in the centre thereof. It weighs 154·32 grains (10 grammes). The cap of the brass cartridge-case is edged with black lacquer.

The powder consists of graphited nitro-cellulose in flakes. The weight of the charge is 48·4 grains (3·15 grammes).

The muzzle velocity is stated to be 2,821 f.s. as against 2,034 f.s. with the '88 pattern ammunition formerly in use.

In addition to the ordinary ammunition, a certain amount of *armour-piercing ammunition* is issued, in which the bullets contain a pointed steel core. Externally, this ammunition is

* 10 metres equal 11 yards, nearly.

almost exactly similar to the ordinary ammunition, the only distinguishing marks being a red lacquer edging round the cap of the cartridge, and the letter "K" on the base instead of "S." The actual bullet is, however, considerably longer, though the portion projecting beyond the cartridge is the same length. This "K" ammunition is used against aircraft, loopole plates, &c.

An *explosive bullet* now employed by the Germans is similar in appearance to the old-fashioned round-nosed bullet, except that it is longer and the nose is pierced by a small hole to act as a gas escape. The explosion is caused by an igniting device actuated by the shock of discharge, and takes place in less than one second after firing, independent of impact. This bullet has been found in the belts of captured German machine guns. Prisoners state that it is intended for use against aircraft, and that normally every 20th cartridge in the belt contains an explosive bullet.

10. Distribution of ammunition.—The following is the distribution of ammunition in the field :—

	Number of rounds per man.
Carried on the soldier	150
In the company ammunition wagon (holding 14,400 rounds) . .	70
In the infantry ammunition columns (28,800 in each wagon), some	155
In the heavy ammunition column, some	20
Total	395

Cartridges are made up in clips of five, three of which form a packet (*Schachtel*); 15 packets (225 rounds) are put up into a box weighing, packed, 16·97 lbs., and 64 of these are carried in each company ammunition wagon, which thus holds 14,400 rounds, weighing 1,069 lbs.

11. Grenades.—(a.) **Rifle grenades.***—An official German text-book, dated 7th August, 1916, states that no more rifle grenades will be manufactured as it is difficult to obtain any real effect with them owing to their want of accuracy :—

(b.) **Hand grenades.**—The following are the types in general use :—

The "Cylindrical grenade with handle" (*Stielhandgranate*), sometimes known as the "Jam-pot and stick grenade"),

"Ball hand grenade" (*Kugelhandgranate*),

both of the time variety ;

"Disc percussion grenade" (*Diskushandgranate*).

The "Egg" (*Eierhandgranate*) is of more recent design, and is used in considerable quantities. This is a small time grenade of the shape, and about the size, of a hen's egg. It weighs only 11 oz. and can be thrown about 50 yards. The bursting charge, consisting of a mixture of black powder, potassium perchlorate, barium nitrate and aluminium powder,

* German rifle and hand grenades are fully described and illustrated in "The Training and Employment of Bombers" (S.S. 126, edition of September, 1916).

is exploded by a time fuze fitted with a friction lighter. The effect of this bomb is small and very local.

The Germans do not seem satisfied with their disc percussion grenade, which is in fact somewhat dangerous to handle and very dangerous to pick up if blind. Attempts are being made to convert the time cylindrical grenade with handle to a percussion pattern. Two varieties of such grenades are known: the first, called the *Wilhelm* or the *Friedrich* grenade, relies on the ordinary ball and spring device, which is contained in the upper part of the handle, to retain the striker; the second has a safety bolt between the striker and the detonator cap, which is kept in position by a spring lever on the side of the handle until this is released by the thrower. Blinds of both types are dangerous to pick up.

(c.) **Gas grenades.**—Various types have been tried, the earlier grenades consisting of a glass sphere containing a corrosive liquid, or producing a lachrymatory or asphyxiating gas. The pattern now in use consists of a spherical grenade about 4 inches in diameter, made of thin sheet iron and containing a lachrymatory liquid, which is scattered by the explosion of a small black powder charge. These gas grenades, however, have never been employed to any great extent.

12. Equipment.—(a.) **Personal.**—The men's kits, consisting of—

1 pair "slacks,"	1 pair drawers,
1 forage cap,	1 pair lace shoes,
2 shirts,	1 set boot brushes,
1 pair of socks,	1 grease tin,
2 handkerchiefs,	1 copper tin,
1 rice bag,	1 salt bag,
1 housewife,	

are carried in a cowhide pack, supported by braces attached to the waistbelt. Inside the pack is a bag for preserved meat rations (iron rations), which can be carried separately if the packs are left behind. An aluminium (blackened) canteen, containing a cup which can be used as a frying pan and detachable handle, is carried on the back of the pack; the canteen holds $4\frac{1}{2}$ pints. On the waistbelt, on each side of the buckle in front, is a leather pouch for 45 rounds, and 30 more are carried in the haversack, and the other 30 in pockets placed in the corners of the flap of the pack (150 rounds in all). The haversack (containing an aluminium drinking-cup) is carried looped on to the belt on the right side, and hooked on in rear of it is the water-bottle, of aluminium, felt-covered, with aluminium screw-stopper and a capacity of $1\frac{3}{4}$ pints. On the left side are carried the sword-bayonet and the entrenching tool. The tools (spade, pick or hatchet), the metal portions of which are enclosed in leather cases, are hung (by means of a leather loop on the cases) from the belt, handle downwards, immediately behind the bayonet. Each man also carries a portion of a tent, consisting of a square of canvas, a pole in three pieces, three tent pegs and a cord; two men, therefore, carry the equipment for one tent which can accommodate both. The whole equipment, put together, can be taken off and put on like a coat. The total weight, including arms, carried in field service marching order by an infantry soldier of medium height is about 55 lbs. (See Plate 5.)

Field glasses are issued in the proportion of five per company.

Steel helmets are issued for trench warfare. The German steel helmet is made of hard, magnetic nickel-steel, and is rather heavier than our own, weighing complete about 2 lb. 8 oz. The helmet has a large lug projecting from either side to which a thick, bullet-

proof, protective face shield can be attached. This shield is very heavy, and is probably intended only for use by snipers and sentries.

The Germans have a high opinion of the value of the steel helmet. As late as the 23rd September, 1916, these helmets had not been issued universally, as a captured order of that date stated that until the infantry had been supplied no demands from other units could be considered.

(.) **Telephone.**—Prior to mobilization, it was laid down that each infantry regiment should provide 6 telephone squads (*Fernsprech-Trupps*), each consisting of 1 corporal or lance-corporal and 3 men. Each of these squads carried 3,300 yards of cable and 1 army telephone; two squads were necessary to construct a line, the maximum length of which was 6,600 yards. This allotment of stores provided for communication between the regiment and each of its 3 battalions.

It would appear from captured documents that the above allotment has been considerably increased; the present organization for open warfare appears to be as follows:—*

Each battalion has a telephone detachment (*Fernsprech-Abteilung*), consisting of an officer and 4 company squads (*Trupps*) each of 1 non-commissioned officer and 3 men. The detachment is provided with 4 army telephones and sufficient cable to erect 13,000 yards of line.

The 3 battalion detachments of an infantry regiment are responsible for all telephone communications from the infantry brigades downwards. Under the new organization, neither brigade nor regimental staffs appear to be provided with telephone equipment.

(c.) **Tools.**—The tools carried by an infantry regiment are as shown in the following table:—

How carried.	For earth works.					For timber work, &c.			
	Spades and shovels.		Picks. Pickaxes.		Hatchets.	Saws.			Wire-cutters.†
	Small.	Large.				Axes.	Hand.	Cross-cut.	
By the men‡	1,200	..	..	120	60	..	..	..	..
1st line transport	..	30	15	..	15	24	..	12	..
Train	..	230	65	..	30	30	6	2	..
Total	1,200	260	80	120	105	54	6	14	..

* Another captured document gives the following organization for a particular infantry regiment:—

The regimental telephone detachment consists of 5 squads, each of 1 non-commissioned officer and 3 men; each squad is provided with one telephone instrument.

Each battalion has a telephone detachment consisting of 5 squads, each of 1 non-commissioned officer and 4 men; each squad is provided with 1 telephone instrument.

A reserve of 5,500 yards of cable is carried in a 2-wheeled telephone cart, which forms part of the regimental train.

† Numbers not known.

‡ In every company half the men carry entrenching tools (viz., 100 small spades, 10 pickaxes and 5 hatchets).

13. Designation of Infantry Regiments.—Although all infantry regiments are similarly armed and equipped, a number of them bear special designations which serve to foster *esprit de corps*. Guard regiments are designated as follows:—

Foot Guards regiment (*Garde-Regiment zu Fuss*).
 Guard fusilier regiment (*Garde-Füsilier Regiment*).
 Guard grenadier regiment (*Garde-Grenadier-Regiment*).

• Line regiments also in some cases have special designations, such as:—

Grenadier regiment (*Grenadier-Regiment*).
 Body grenadier regiment (*Leib-Grenadier-Regiment*).
 Body regiment (*Infanterie-Leib-Regiment*).
 Fusilier regiment (*Füsilier-Regiment*).

Grenadier regiments wear the *Litzen* * on collar and cuffs, which also distinguish all Guard regiments. In most cases, the 3rd battalion of a grenadier regiment is known as a fusilier battalion.

All Active infantry regiments of the line have, besides their number, a territorial title, e.g., 120th Inf. Regt. (*2nd Württemberg*). The active regiments of old standing have often an honorary title in addition, thus the 120th Inf. Regt. (*2nd Württ.*) also bears the title *Kaiser Wilhelm, König von Preussen*.

* See page 109.

CHAPTER VI.

MACHINE GUNS.

1. Peace organization.—Machine guns form a factor of ever increasing importance in the organization of the German Army. In peace, every infantry regiment and *Jäger* battalion was provided with a machine gun company of 6 guns and 1 spare gun. In addition, there were a number of independent field and fortress machine gun detachments (*Abteilungen*), which were rapidly absorbed in the early stages of the war to provide machine gun units for new formations.

2. Expansion during 1915 and 1916.—As the demand for more machine guns grew, and as the output increased, a number of new machine gun sections were formed. These sections, known as *Feldmaschinengewehrzüge* and *Maschinengewehr-Ergänzungszüge* (supplementary machine gun sections), consisted of 30—40 men under an officer, with three or four machine guns. One or two of these sections were attached to infantry regiments as required, and, in some cases, were absorbed to form a second machine gun company for the regiment to which they were attached. By the end of 1915 several infantry regiments possessed two machine gun companies.

At the beginning of 1916 the number of machine guns in the German Army had increased from 1,578, the peace strength, to something over 8,000. The output was steadily increasing and the experiences of the campaign had established the dominating influence of the machine gun both in attack and defence.

During the winter of 1915-1916, a new series of machine gun units was formed and trained with the purpose of developing to the full the power of the arm.

These units were known as machine gun marksman sections (*M.G. Scharfschützen-Trupps*). They were formed from picked machine gunners who underwent a course of four or five weeks' training at the training centres at Döberitz (Brandenburg), Hammelburg (Bavaria) and Beverloo (Belgium). Their training was specially directed towards the employment of machine guns in the attack.

In February and March, these units began to arrive at the front and were first employed in the battle of Verdun during March, 1916. They were allotted to infantry regiments engaged in offensive operations or holding difficult sectors. The total number of marksman sections formed was 200, *i.e.*, approximately one per Division.

The establishment of a machine gun marksman section was as follows:—

- 1 captain or lieutenant,
- 2 *Feldwebel* or *Vizefeldwebel*,
- 6 gun commanders (*Unteroffiziere*),
- 20 lance-corporals,
- 40 machine gunners,
- 1 cyclist orderly,
- 1 armourer,
- 1 medical corporal,
- 1 transport driver,
- 6 spare men,

making a total of 1 officer and 78 other ranks.

3. Reorganization in 1916.—By July, 1916, the total number of machine guns, including captured guns in use, had risen to 11,000. No standard organization had, however, been adopted, so that the successive creation of variously organized machine gun units led to a very irregular allotment of machine guns to infantry formations. Thus, in the spring of 1916, some infantry regiments had only 6 machine guns, while others had more than 25. In August, 1916, the machine gun formations were reorganized, and the machine gun company of 6 guns was adopted as the standard unit. A staff officer for machine guns was added to the Headquarters of each Army. By the end of 1916, the number of machine guns in the German Army had risen to nearly 16,000.

The organization introduced in September, 1916, is as follows:—

A.—Regimental Machine Gun Companies.—Every infantry regiment has three machine gun companies, numbered 1st, 2nd and 3rd. One of these companies is attached to each battalion of the regiment. At the headquarters of each infantry regiment there is a regimental machine gun officer who supervises the work of the three machine gun companies.

The second and third machine gun companies in each regiment were formed by absorbing the existing “sections,” “supplementary sections” and “detachments” attached to infantry units. The reorganization had been completed by the end of 1916.

B.—Machine Gun Marksman Companies.—The machine gun marksman sections already existing prior to August, 1916, have been converted into companies, with an establishment identical to that of the regimental machine gun companies. These machine gun marksman companies are not attached to infantry regiments, but are combined in groups of three to form “machine gun marksman detachments” (*Maschinen-Gewehr-Scharfschützen-Abteilungen*), which act as a reserve of machine guns under Divisional or Corps orders. One of these machine gun marksman detachments is normally attached to each Infantry Division.

The men of these units are more highly trained than the personnel of regimental machine gun companies; they wear a metal badge representing a machine gun on the left arm.

To sum up:—The basis of the machine gun organization in the German Army is the machine gun company. These units are employed either:—

- (a.) Singly, attached to infantry battalions, or
- (b.) Combined in groups of three “marksman companies” in “marksman detachments,” which are attached as a reserve either to Divisions or to Corps.

4. The establishment of a machine gun company (or a machine gun marksman company) is as follows :—

Personnel.			Horses.		Vehicles.
Officers.	N.C.Os. and men.		Riding.	Draught.	(2-horsed).
1	..	Company commander	1	..	..
8	..	2nd Lieutenants or <i>Offizierstellvertreter</i> .. .. .	..	..	..
..	1	Serjt.-major (<i>Feldwebel</i>) .. .. .	..	..	..
..	2	Serjeants (<i>Vizefeldwebel</i>) .. .. .	..	..	..
..	6	Gun-commanders (<i>Unteroffiziere</i>) .. .. .	..	..	..
..	1	Armourer-serjeant .. .. .	..	..	..
..	1	Quarter-master-serjeant .. .. .	..	..	..
..	1	Corporal-cook	1	..	..
..	1	Armourer's assistant .. .. .	..	..	..
..	1	Medical corporal .. .. .	..	..	..
..	10	Lance-corporals } * .. .. .	..	..	..
..	57	Privates .. } .. .. .	..	..	..
..	4	Train soldiers attached .. .. .	..	..	..
..	..	2-horsed machine gun wagons .. .. .	..	12	6
..	..	2-horsed machine gun ammunition wagon. .. .. .	..	2	1
..	..	2-horsed machine gun supply wagon for rations and forage. .. .. .	..	2	1
..	..	Small 2-horsed travelling kitchen .. .. .	..	2	1
4	85	Total	2	18	9

* Made up as follows :—

48 machine gunners (8 per gun).	1 tailor.
3 orderlies.	1 shoemaker.
4 telephonists.	6 drivers.
1 cyclist.	2 cooks.
1 shoeing-smith.	

5. **Special Machine Gun units.**—(a.) **Mountain Machine Gun Detachments.**—In addition to the regimental machine gun companies and marksman machine gun companies described above, there exist 50 mountain machine gun detachments (*Gebirgs-Maschinen-Gewehr-Abteilungen*), which are specially equipped for mountain warfare. They were at one time employed in the Vosges, but in 1916 were all transferred to the Carpathians and the Balkans. The personnel wear the uniform of the mountain troops.

(b.) **Machine Gun Companies of Cyclist Battalions.**—These units were formed in July, 1916, for use with the cyclist battalions which took part in the Rumanian campaign. The machine guns are mounted on motor lorries.

Each company has six machine guns; its establishment is as follows :—

- 3 officers,
- 1 serjeant-major (*Feldwebel*),
- 1 serjeant (*Vizefeldwebel*),
- 6 gun-commanders (*Unteroffiziere*),

- 1 armourer-serjeant,
- 1 medical corporal,
- 34 lance-corporals and privates,
- 2 corporals of mechanical transport,
- 12 mechanical transport drivers,
- 1 motor-cyclist,
- 3 train soldiers attached.

The company is organized in 3 sections, each of 2 guns. Each section is transported in a motor lorry, with guns, detachment and ammunition, so that each lorry can act as an independent unit. The ammunition carried consists of 15,000 rounds per gun.

The transport consists of—

- 1 4-seater motor car for the commanding officer,
- 3 3-ton lorries for gun detachments,
- 1 store lorry for baggage, tools and reserve ammunition,
- 1 petrol wagon.

The men are armed with revolvers and the non-commissioned officers are provided with field-glasses in addition.

(c.) **Cavalry Machine Gun units.**—In peace, no machine gun units were attached to cavalry formations. There existed, however, 11 independent machine gun batteries (*Abteilungen*), which, on mobilization, were allotted to the 11 Cavalry Divisions.

A *Jäger* battalion (with its machine gun company) was also attached to each Cavalry Division, which thus disposed of 12 machine guns.

During 1916, a machine gun section was attached to each cavalry regiment, and these sections were finally expanded into machine gun squadrons.

No details are yet available concerning the organization, armament, or means of transport of machine gun squadrons.

6. The Machine Gun.—All the above-mentioned units are armed with the 1908 pattern (Maxim) machine gun, known as *M.G. 08*. It has the same calibre as the German rifle, namely, .311 inch (7.9 mm.). The gun is mounted on a sledge with four legs. The height of the gun in action can be adjusted by altering the spread of the legs.

Muzzle velocity	..	..	..	..	..	2821 f.s.
Limit of sighting	..	..	..	..	..	2,200 yards.
Extreme range (at 32° elevation)	..	..	..	..	..	4,400 yards.
Rate of fire	..	..	..	..	..	400–500 rounds per minute.
Number of rounds in belt	..	..	..	..	..	250.
Weight of filled belt	..	..	..	..	..	16 lbs.
Length of gun without muzzle attachment	..	..	..	..	..	43 inches.
Length of barrel	..	..	..	..	..	28.35 inches
Weight of gun	..	..	..	..	..	55 lbs.
Weight of sledge mounting	..	..	..	..	..	75 lbs.
Weight of gun complete with sledge (<i>Schlitten</i>)	..	..	..	..	..
and water jacket filled	..	..	..	..	..	140 lbs.
Weight of water-filling (7 pints)	..	..	..	..	..	8½ lbs.

Machine guns are manufactured at the Government factories at Berlin and Spandau. Each gun is stamped with the year of manufacture and the factory number.

A prismatic Goerz sight with a magnification of $2\frac{1}{2}$ diameters is provided, which slides into a slot on the gun.

7. Machine Gun Ammunition.—The amount of ammunition carried per gun prior to the reorganization of the machine gun units was—

8,000 rounds per gun on the limbered gun wagons.
4,000 rounds per gun on the 3 ammunition wagons.

Total .. 12,000 rounds.

The amount now carried appears to be—

8,000 rounds per gun on the limbered gun wagons.
1,300 rounds per gun on the ammunition wagons.

Total .. 9,300 rounds.

The ammunition used by machine gun units is of three kinds, namely—

- (a.) Ordinary "S" ammunition.
- (b.) Armour-piercing "K" ammunition.
- (c.) Explosive bullet ammunition.

(a.) *Ordinary "S" ammunition* is the same as that used in the rifle, *see* page 43.

(b.) *Armour-piercing "K" ammunition* is employed against aircraft, loophole plates, &c. It resembles the "S" ammunition externally, but the actual bullet is considerably longer and contains a pointed steel core.

(c.) *Explosive bullet ammunition* is intended for use against aircraft, and normally every 20th cartridge in the belt contains an explosive bullet. This is similar in appearance to the old-fashioned round-nosed bullet, except that it is longer, and the nose is pierced by a small hole to act as a gas escape.

8. Training of Machine gunners.—Great care is devoted to the training of machine gunners, more particularly of the personnel of "marksman" units, but all machine gunners are picked men.

The principal machine gun schools in Germany are at Döberitz (for Prussian troops), Hammelburg (for Bavaria), and Zeithain (for Saxony). There are also large schools at Beverloo and Brasschaet in Belgium, and at Rozoy-sur-Serre (south of Hirson).

A machine gun course usually lasts a month, and the following are the main features of the instruction given :—

- (1.) Expert knowledge of the German machine gun, which every man must be able to dismantle and put together again.
- (2.) Doing repairs, and dealing quickly with all kinds of "jams."
- (3.) Handling of captured guns (especially the Lewis gun).
- (4.) Range practice at fixed targets—beginning at 400 and ending at 800 metres.
- (5.) Firing at moving dummies at various ranges up to 800 metres.
- (6.) Sustained fire at the rate of 500 rounds per minute, including addition of fresh water to the jacket at the end of the fourth belt (*i.e.*, after 1,000 rounds).
- (7.) Signalling and entrenching.
- (8.) Lessons in the construction of alternative emplacements in the trenches.

9. **Automatic rifles.**—Two series of units armed with automatic rifles have appeared in the German Army during the war:—

- (a.) *Musketen Battalions* (*Musketen-Bataillone*).
- (b.) *Light Machine-Gun Sections* (*Leichte M.G. Trupps*).

(a.) "**Musketen**" Battalions.—*Musketen* battalions first appeared in the Champagne battle in September, 1915, when three were identified; their number has not since been increased. Two of these units took part in the Somme battle, and are apparently the only ones now in existence.*

A *Musketen* Battalion consists of about 500 men, and is organized in three companies. Each company is armed with 30 automatic rifles, and has an establishment of four officers and 160 other ranks. There is a squad of four men for each automatic rifle.

According to official orders captured during the Somme battle, the automatic rifle is purely a defensive weapon and is not employed in the attack. Units armed with automatic rifles are kept as a reserve of fire-power, usually in second line positions, to defend threatened points.

The *Muskete* is similar in construction to the Danish Madsen automatic rifle. It has two pivoted supporting legs attached near the muzzle.

Length of rifle	..	..	..	..	..	..	3 feet 8 inches,
Height at point of support	..	..	..	..	..	..	1 foot 2 inches.
Weight unloaded	..	..	..	..	..	..	21½ lbs.

The rifle is fed from a magazine holding 25 rounds. The barrel, range and ammunition are the same as for the '08 pattern machine gun.

(b.) **Light machine gun sections.**—These units were formed at the Döberitz Machine Gun School during July, August and September, 1916, doubtless as an answer to the British Lewis gun. They are armed with the Bergmann automatic rifle, 1915 pattern, manufactured by the firm of Bergmann, at Suhl. The barrel of the Bergmann rifle is the same as that of the '08 pattern machine gun, and its range is the same; but the Bergmann rifle is only sighted up to 400 metres, as it is intended to be employed at close ranges. The rifle tends to get overheated after firing 300 rounds rapid.

The establishment of a light machine gun section is as follows:—

- 1 officer (lieut., 2nd lieut., or *Offizierstellvertreter*).
- 1 *Feldwebel*.
- 3 corporals (*Unteroffiziere*).
- 9 lance-corporals (*Gefreiten*).
- 28 privates.
- 1 artificer.
- 2 transport drivers.
- 10 horses (1 riding).
- Total—1 officer and 44 other ranks.

The section is organized in three sub-sections, each with three automatic rifles. Each sub-section is commanded by a corporal, the detachment for each automatic rifle consisting of 1 lance-corporal and 3 men.

* The 1st *Musketen* Battalion was originally the 4th battalion of the 117th Body Infantry Regiment.

The transport consists of two 2-horsed limbered wagons to carry the automatic rifles, which are kept in boxes.

The men are armed with rifles, and each non-commissioned officer is provided with field glasses in addition.

A series of 111 of these light machine-gun sections was formed in 1916, viz. :—

1—87	..	..	..	..	..	..	..	Prussian.
88—99	..	..	..	..	..	..	..	Bavarian.
100—107	..	..	..	..	..	..	..	Saxon.
108—111	..	..	..	..	..	..	..	Württemberg.

Hitherto these units have been almost exclusively employed on the Eastern Front. It appears probable, however, that before long each infantry regiment will be provided with a light machine gun section or squad.

CHAPTER VII.

CAVALRY.

1. General organization.—The German Cavalry is organized in—

- (a.) Independent Cavalry Divisions.
- (b.) Divisional Cavalry.

In peace, the cavalry was not organized in Divisions except in the Guard Corps, but each Army Corps District provided two or three cavalry brigades. On mobilization, 11 Cavalry Divisions were formed, the regiments surplus to the requirements of the Cavalry Divisions furnishing the Divisional Cavalry of Infantry Divisions.

In peace, the German Cavalry consisted of 110 cavalry regiments, each of five squadrons. On mobilization, each regiment left one squadron behind at its home station to act as a *depôt* squadron.

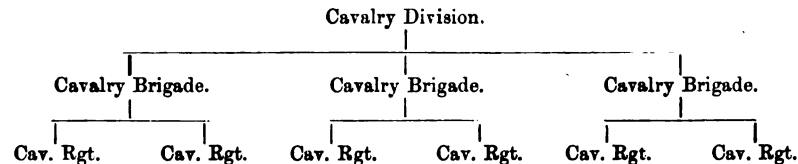
Most cavalry regiments now have a fifth squadron in the field, and some a sixth, but these extra squadrons are detached as Divisional Cavalry. A regiment forming part of a Cavalry Division consists of four squadrons and a machine-gun squadron.

The war establishment of a squadron is :—

- 4 officers.
- 163 other ranks (150 sabres).
- 178 horses.
- 3 vehicles.

2. The organization of a Cavalry Division.—11 Cavalry Divisions were formed on mobilization, and this number has not been increased.

The normal composition of a Cavalry Division is as follows :—



Jäger battalion.

Cyclist company.

Horse artillery *Abteilung* (3 batteries).

Pioneer detachment (1 officer and 33 other ranks).

Intelligence detachment (*Nachrichten-Abteilung*), comprising 1 Heavy or 2 Light

Wireless Stations, and the telephone squads of the regiments.

The war establishment of a Cavalry Division is—

- 283 officers.
- 4,955 other ranks.
- 5,590 horses.
- 216 vehicles.

3. Employment of Cavalry Divisions.—Before the war, the German cavalry was taught to rely more on the fire-action of artillery, machine guns and carbines than on the *arme blanche*. Mass and shock tactics were discouraged, special stress being laid on vigorous offensive action by small cavalry detachments.

The German Cavalry Divisions displayed little enterprise or initiative at the beginning of the campaign. Their tactics during the initial advance were marked by extreme caution, and seemed directed towards passive reconnaissance rather than to offensive action. During the retreat from the Marne to the Aisne, and again in October, 1914, the German cavalry rendered valuable assistance to its infantry. Reinforced by *Jäger* battalions and machine gun batteries, and sometimes even by heavy artillery, the Cavalry Divisions effectively extended the northern flank of the battle-line and fought stubborn rearguard actions until relieved by the arrival of the Infantry Divisions.

From the autumn of 1914 to December, 1916, the Cavalry Divisions, with one exception, were employed on the Eastern Front, where the operations partake more of the nature of open warfare than in the West. One Cavalry Division was, however, retained in Belgium for the purpose of policing the country and guarding the Dutch frontier.

4. Divisional Cavalry.—Normally each Infantry Division has two squadrons of Divisional Cavalry; some Infantry Divisions have three squadrons, while others have only one.

During trench warfare, the squadrons of Divisional Cavalry assist the infantry by taking turns in the trenches. When not thus employed, these units do duty in patrolling the roads, in escort duty, and in finding guards, posts, piquets and orderlies.

The Divisional Cavalry is usually commanded by a captain, even when it comprises more than one squadron.

5. Cavalry units formed during the war.—Since the beginning of the war, about 40 reserve cavalry regiments have been formed—in addition to a certain number of Ersatz regiments and Landwehr and Landsturm squadrons.

These units are principally allotted as Divisional Cavalry to new formations; some of them, more especially the Landsturm squadrons, are employed in guarding neutral frontiers and in patrolling the occupied territories and the lines of communication.

6. Dismounted Cavalry units.—During 1916, a number of regiments employed as Divisional Cavalry were withdrawn from the front, dismounted, and converted into dismounted rifle regiments (*Schützen-Regimenter*). The units thus dismounted were chiefly Reserve and Ersatz formations.

Dismounted rifle regiments are equivalent to infantry battalions and are organized as follows:—

4 squadrons.

1 machine gun company.

Each squadron consists of three platoons and a trench mortar detachment, so that it resembles an infantry company. The men are armed with carbines and bayonets and are equipped as infantrymen.

In some cases the squadrons are called companies.

Dismounted rifle regiments are attached to Infantry Divisions. They take over sectors of the line, usually in quiet parts of the front, to relieve infantry units for operations elsewhere.

7. Armament.—The armament of the cavalry is the same for all mounted regiments. At the beginning of the war officers and staff-serjeants were armed with sword and

revolver; corporals with lance, sword and revolver; lance-corporals and privates with lance, sword and carbine. At the end of 1914 bayonets were issued to the cavalry,* and in July, 1915, their swords were withdrawn.

(a) **Lance.**—The steel lance (*Stahlrohrlanze*) has a four-edged point of forged steel forming one piece with the shaft, which is of cast steel and hollow.

Length	..	..	..	..	10 feet 6 inches.
Weight	..	..	..	..	3·94 lbs.
Point of balance	..	..	..	..	5 feet 0½ inch from the point.

(b.) **Automatic pistol.**—The revolver formerly in use has been replaced by the '08 automatic pistol, which takes eight cartridges.

Calibre	..	..	..	..	·354 inch (9 mm.).
Weight	..	..	..	..	1·8 lbs. (835 grammes).
Weight of bullet	..	..	..	..	125 grains (8 grammes).

(c.) **Carbine.**—The '98 pattern carbine (*Karabiner '98*) is similar in design to the '98 pattern rifle and takes the same ammunition.

Calibre	..	..	..	..	·311 inch (7·9 mm.).
Weight	..	..	..	..	7·93 lbs.
Length	..	..	..	..	43½ inches (5½ inches shorter than rifle).
Length of barrel	..	..	..	..	23½ inches.
Sighted up to	..	..	..	..	2,200 yards.

8. **Saddlery and personal equipment.**—The saddle is somewhat similar to that in use in the British Service, but is lighter and higher in the arch and the flaps are deeper and wider. The girth-buckle protector flaps are of numnah, and the panels are made of the same material. A thick woollen blanket (7 feet 7 inches by 6 feet 4 inches) is folded in four under the saddle. The stirrups are wide and heavy, and are made of nickelled metal. The girths are of the Cape pattern and a surcingle is carried. The wallets in which the kit is carried are large and roomy, more of the nature of saddlebags. In the near wallet is a pocket for cartridges, and the shoe case is attached to the outside of it. A spade or hatchet can also be attached.

The bits differ from those in use in the British Army, the bridoon being much thicker and the big bit has a considerably lower port and shorter cheek.

A short piece of rope, with a ring at one end, is carried over the carbine bucket. When a number of these ropes are joined together one long picketing rope is made, which passes over two long stakes carried in one of the baggage wagons and forms the picket line to which the head ropes are attached.

A corn sack, shaped like a sausage, is strapped in rear of the saddle over the rolled cloak.

The carbine is usually carried in a bucket, fitted with a flap to button over the butt, on the near side of the saddle in an almost vertical position, except in the Bavarian cavalry, where it is carried in a case fixed to the off wallet and rests on the man's thigh. On patrol work and when a fight is imminent, however, the carbine is carried slung over the shoulder.

* The more recently formed *Jäger zu Pferde* regiments had already been equipped with the bayonet prior to mobilization.

A mess-tin made of aluminium, holding $4\frac{1}{2}$ pints, is carried in a leather case on the near side of the saddle. The tin cover can be used as a cup or frying pan, and a separate handle for this cover fits inside the mess-tin. The water-bottle is the same as that of the infantry, and is carried in the same manner.

When fully equipped in marching order the weight carried by the troop horse without the man is about 100 lbs.

An officer's saddlery and equipment consists of an officer's regulation saddle, blanket (*Woolach*), two wallets, one saddlebag, shoe case, greatcoat cover, corn sack, drinking bucket and leather head rope.

9. Equipment.—Cavalry regiments acting with Cavalry Divisions are provided with telephone and bridging equipment, together with tools and explosives for effecting demolitions.

(a.) **The telephone equipment** consists of two army telephones and 15,300 yards of "cavalry wire," the whole being carried on horseback. Each regiment has two telephone squads, each of two non-commissioned officers and two men.

(b.) **The bridging equipment** of a cavalry regiment consists of four half-boats of galvanized steel, together with the necessary transoms, chesses and other stores. The half-boats are 11 feet $3\frac{1}{2}$ inches long, 5 feet 2 inches broad, and weigh about $2\frac{1}{2}$ cwt. They are lashed together stern to stern, thus forming a complete boat, which can carry 8—10 men with their equipment. The bridging material is carried in two 6-horsed cavalry bridge wagons.

The material carried by a cavalry regiment is sufficient to construct about 21 yards of footbridge (*Brückensteg*), or 13 yards of light bridge (*Laufbrücke*), or about $8\frac{1}{2}$ yards of bridge to take field guns (*verstärkte Laufbrücke*). This material can also be formed into a raft capable of transporting 30 infantry men with their equipment, or four horses and horseholders, or one field gun and limber.

(c.) **The explosives** carried by a cavalry regiment consist of 40 explosive cartridges and fuzes.

10. Designation of Cavalry regiments.—The Active cavalry regiments, although all similarly armed and equipped, are differently designated, as follows:—

- 1 Regiment of *Gardes du Corps*.
- 1 Guard Cuirassier Regiment.
- 8 Cuirassier Regiments.
 - (No. 1 is known as the "Body Cuirassier Regiment.")
- 2 Guard Dragoon Regiments.
- 26 Dragoon Regiments.
 - (No. 3 is known as the "Horse Grenadier Regiment.")
 - (Nos. 25 and 26 are Württemberg.)
- 1 Body Guard Hussar Regiment.
- 20 Hussar Regiments.
 - (Nos. 1 and 2 are known as "Body Hussar Regiments.")
 - (Nos. 18, 19 and 20 are Saxon.)
- 3 Guard *Ulanen* Regiments.
- 21 *Ulanen* Regiments.
 - (Nos. 17, 18 and 21 are Saxon.)
 - (Nos. 19 and 20 are Württemberg.)

- 1 Saxon Guard Cavalry Regiment (*Garde-Reiter-Regiment*).
- 1 Saxon *Karabinier* Regiment.
- 13 *Jäger zu Pferde* Regiments.
- 2 Bavarian *Ulanen* Regiments.
- 2 Bavarian Heavy Cavalry Regiments (*Schwere-Reiter-Regimenter*).
- 8 Bavarian Light Horse Regiments (*Chevaulegers-Regimenter*).

The uniform varies for the different types of regiment, as follows :—

Cuirassier and dragoon regiments wear a tunic and spiked helmet.

Hussar regiments wear a braided *Attila*, fur busby, and shoulder cords instead of shoulder straps. (See Plate 3.)

Ulanen regiments wear a double-breasted tunic (*Ulanka*), lance-cap (*Tschapka*), and rounded shoulder-straps. (See Plates 3 and 9.)

Saxon *Ulanen* regiments wear ordinary shoulder straps.

Bavarian *Chevaulegers* regiments wear a spiked helmet.

Jäger zu Pferde regiments wear a grey-green uniform similar to that of *Jäger* battalions. They wear a black steel helmet.

CHAPTER VIII.

ARTILLERY.

A.—Field Artillery.

1. **General organization.**—Prior to mobilization there were 642 batteries of horse and field artillery, or rather less than 1 battery per battalion of infantry. This proportion has been very slightly increased during the war, and the ratio of 1 field battery per battalion is maintained. The total number of field batteries at the end of 1916 was about 2,100.

Field artillery includes horse artillery (*reitende Artillerie*). Horse artillery is allotted to Cavalry Divisions (*see* page 55). Field artillery proper is entirely allotted to Infantry Divisions. It consists of—

Field gun batteries, equipped with the 7·7-cm. field gun, and

Field howitzer batteries, equipped with the 10·5-cm. light field howitzer.

In peace, batteries consisted of 6 field guns or 4 light field howitzers, but during 1915 all field batteries were reduced to 4 guns, in order to provide material for new formations. In April, 1916, artillery establishments were still further reduced by withdrawing the lead horses from ammunition columns and transport wagons.

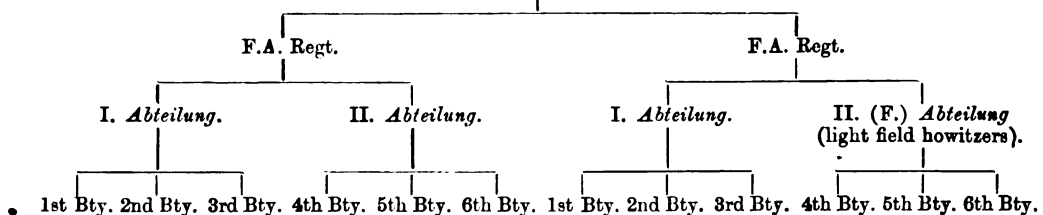
During 1916 a series of independent field artillery batteries, numbered from 801 to 915, was formed. These batteries have been used to reinforce the artillery of Divisions on the Eastern Front.

2. **Divisional Artillery organization.**—The artillery of an Active Division is known as a Field Artillery Brigade * (*Feld-Artillerie-Brigade*), usually commanded by a Major-General.

The Divisional artillery organization varies somewhat in Active, Reserve and New-Formation Divisions.

In Active Divisions, when a Field Artillery Brigade exists, its organization is as follows:—

Field Artillery Brigade.



The *Abteilungen* are numbered I. and II., and the batteries from 1—6 in each regiment.

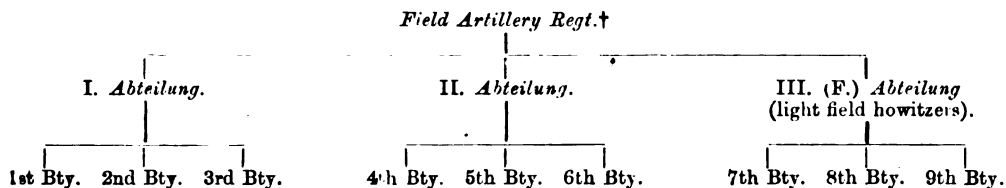
* Not to be confused with the British Field Artillery Brigade of three batteries, the German equivalent for which is "*Abteilung*." The Major-General commanding a German Field Artillery Brigade corresponds to the C.R.A. of a British Division.

Light ammunition columns.—Every *Abteilung* of field guns or light field howitzers has a light ammunition column (*leichte Munitionskolonne* or *leichte Feldhaubitzen-Munitionskolonne*). It consists of—

- 24 ammunition wagons (4-horsed) carrying 2,154* rounds.
- 1 store wagon (4-horsed).
- 1 travelling kitchen (2-horsed).

A light ammunition column is divided into three sections.

The Reserve and New-Formation Divisions created since mobilization have usually a smaller allotment of field artillery, viz. :—



Thus, the number of field batteries varies between 9 and 12 per Division.

Field howitzer batteries now form $\frac{1}{4}$ to $\frac{1}{3}$ of the total field artillery. In peace, field howitzer batteries formed $\frac{1}{3}$ of the total, as only one *Abteilung* in each Army Corps was equipped with light field howitzers.

3. The organization of a field battery (gun or howitzer).—A field battery is commanded by a captain (*Batterie-Führer*), and is organized in two sections (*Züge*), each commanded by a subaltern. There is a third subaltern to supervise ammunition supply, or to act as forward observing officer.

The vehicles and transport of the battery are organized as follows :—

Firing Battery (*Gefechts-Batterie*).

- 4 guns or howitzers (6-horsed).
- 4 ammunition wagons (6-horsed).‡
- 1 observation wagon (6-horsed).

1st Line Transport (*Gefechts-Bagage*).

- 4 led horses.
- 1 limbered store wagon (4-horsed).
- 1 travelling kitchen (2-horsed).

Train (*Grosse Bagage*).

- 1 store wagon (4-horsed).
- 1 forage wagon (4-horsed).
- 1 supply wagon (4-horsed).

Battery Commander's Staff (*Batterie-Trupp*).

- 2 *Unteroffiziere* with director.
- 3 orderlies (1 with the stereo-telescope and 1 with signalling flags).
- 2 mounted telephonists.
- All the above carry small spades and wire cutters.

* 1,390 rounds in light field howitzer ammunition column.

† The Colonel Commanding the Field Artillery Regiment would in this case act as Divisional Artillery Commander.

‡ The firing battery wagons are known as the *Staffel*.

On the 18th April, 1916, when artillery establishments were still further reduced to provide for the creation of new units, the following establishment was laid down for a field battery:—

Personnel.			Horses.			Vehicles.		
Officers.	Other ranks.		Riding.	Draught.		6-horsed.	4-horsed.	2-horsed.
				Wheel.	Lead.			
1	..	Battery commander	2	..	..	..	..	..
3	..	Lieutenants (or 2nd lieutenants)	6	..	..	..	..	..
..	1	Battery serjeant-major (<i>Wachtmeister</i>) ..	1	..	..	..	..	..
..	1	Deputy battery serjeant-major (<i>Vize-wachtmeister</i>) ..	1	..	..	..	..	..
..	1	Ensign (<i>Fähnrich</i>)	1	..	..	..	..	..
..	8	Corporals (<i>Unter offiziere</i>)	8	..	..	..	..	..
..	8	Trumpeters	3	..	..	..	..	..
..	12	Bombardiers (<i>Gefreiten</i>)	4	..	..	..	..	..
..	2	Fitters .. .. .	..	..	..	..	..	..
..	2	Saddlers .. .. .	..	..	..	..	..	..
..	1	Wheeler .. .. .	..	..	..	..	..	..
..	33	Gunners .. .. .	..	..	..	..	..	..
..	36	Drivers .. .. .	..	..	..	..	..	..
..	9	Train drivers .. .. .	..	..	..	..	..	..
..	1	Shoeing-smith	1	..	..	..	..	..
..	1	Medical corporal .. .. .	..	..	..	..	..	..
..	1	Artificer (corporal, bombardier or private) ..	..	..	..	..	..	..
..	..	4 guns or howitzers with limbers .. ..	..	8	16	4	..	..
..	..	4 ammunition wagons	}...	10	20	5	..	..
..	..	1 observation wagon		4	4	..	2	..
..	..	2 store wagons .. .. .	..	2	2	..	1	..
..	..	1 forage wagon .. .. .	..	2	2	..	1	..
..	..	1 supply wagon .. .. .	..	2	2	..	..	1
..	..	1 travelling kitchen .. .. .	..	2	..	..	..	1
..	..	Spare horses .. .. .	..	2	2	..	..	..
4	112	Totals	27	30	46	9	4	1

A total of 4 officers, 112 other ranks, 103 horses, 14 vehicles.

4. The field gun.*—(a.) The gun.—The 1896 pattern field gun (*Feldkanone 96 n/A.*) is the old 15-pr. converted to a Q.F. gun. It is mounted on a shielded recoil carriage. The principal details are as follows:—

Calibre	3.03 in. (7.7 cm.)
Length of gun	27.3 calibres.
Weight of gun in action	19.3 cwt.
Weight of carriage	9.4 cwt.
Weight of gun limbered up without gunners	35.6 cwt.

* For new field gun (K.I.H.) see Appendix C, p. 120.

Weight of wagon..	..	..	..	..	37.7 cwt.
Limits of elevation	..	..	..	..	— 12°, + 16°.
Amount of traverse	..	..	..	..	8°.
Weight of charge	..	..	..	..	1.2 lbs.
Muzzle velocity	..	..	..	..	1,526 f.s.
Maximum range with percussion fuze	..	..	..	..	9,186 yards.
Maximum range with time fuze	..	..	..	..	7,874 yards.

The gun consists of an inner tube, rifled with 32 grooves, the rear half of the inner tube being covered by a jacket which is shrunk on and secured by a screw ring half-way between breech and muzzle. The breech end of the jacket is shaped to take the breech wedge, and has a lug for the attachment of the recoil buffer. Three recoil guides, shrunk on to the gun, enable it to recoil along the buffer slide.

The single-motion wedge breech action has an axial striker. The breech lever is placed above the breech and is actuated from the right side of the gun.

(b.) **The carriage.**—The upper carriage consists of the cradle, buffer-cylinder and traversing gear. The recoil buffer and running-out springs are contained in the cradle and are placed beneath the gun.

The lower carriage is mounted on 4-ft. 5½-in. wheels. The wheel-track is 5 ft. The axletree carries a shield, which is 5 ft. 6 in. high when fully extended, and two axletree seats.

The box trail is provided with a spade and traversing lever, and carries two seats, one for the layer and one for the loader. The tyre-brakes are combined with a rope-brake on the axletree arms.

The horse artillery gun is the same as that of the field artillery, but no men are carried on the axletree seats.

(c.) **The sights.**—The sighting gear consists of a toothed arc tangent sight fitted with a panoramic dial sight (*Rundblick-Fernrohr*). The tangent sight works in a sight-bracket on the left side of the cradle and is fitted with a bubble level.

As the line of sight is not independent of the gun elevation, a corrector slide, interposed between the tangent sight and the sight bracket, enables the trajectory to be modified, thus altering the height of burst. Each corrector graduation is equivalent to an alteration of 8½ minutes in the angle of sight.

(d.) **Vehicles.**—The limber has a steel pole; the centre and lead horses are hooked to a master-bar on the point of the limber pole. Collars are used instead of breast harness. Three men are carried on the limber. The ammunition box is of steel plate and holds 36 rounds* in baskets containing three rounds each. The total weight behind the team is about 43 cwt., including two gunners on the axletree seats and three on the limber.

The wagon body is of similar construction, but carries 54 rounds†. In action, the wagon body is unlimbered on the right side of the gun, the perch being then supported by a prop. The shielded lid falls down to protect the gunners in action. Three men are carried on the wagon limber and one on the wagon body.

Two store wagons (*Vorratswagen*) accompany the battery. One is limbered and carries rations, medical and veterinary chests, tools and spare parts. The limber carries ammunition. The other store wagon is 4-wheeled and carries the field forge, artificers' tools, spare clothing, equipment, and officers' baggage.

* When long shell are carried, the box holds 24 long shell and 6 ordinary shell or shrapnel.

† Long shell are never carried in the wagon body.

5. ***Field gun ammunition.**—(a.) **Projectiles.**—Fixed ammunition is used ; three rounds are packed in a basket, the total weight being 60 lbs. (62 lbs. in the case of long shell). The universal shell, as well as the 1896 and 1914 pattern H.E. shell, will become obsolete when the present stocks are exhausted. Four types of projectile will then be in use, viz. :—

- (a.) 1915 pattern H.E. shell, with bursting charge of 0·84 lbs. of amatol or picric acid.
- (b.) Long H.E. shell, with bursting charge of 2·0 lbs of amatol.
- (c.) 1896 pattern shrapnel, containing 300 bullets, each weighing 10 grammes.
- (d.) Gas shell (asphyxiating).

The long shell weighs 15·6 lbs., the other projectiles 15 lbs.

(b.) **Fuzes.**—The percussion fuze used with the long H.E. shell is an internal nose fuze, encased in a solid pointed iron cap. There are two varieties, *L.K.Z. 16 o. V.* and *L.K.Z. 16. m. V.*, for direct and delay percussion action, respectively. A delay action percussion fuze, *K.Z. 16. m. V.*, made of iron, is used with the 1915 pattern H.E. shell. These delay action fuzes are used with H.E. shell in order to destroy trenches and material and to obtain ricochet effect against living targets in the open.

A time and percussion fuze, *L.K.Z. 11. Gr.*, of brass or zinc, graduated up to 7,200 m (7,874 yards), is also employed with the H.E. shell.

A steel gaine, containing a cartridge of picric acid wrapped in paraffined paper, is attached to every German fuze employed with H.E. shell. A powerful detonator is embedded in the picric acid.

Shrapnel shell are fuzed with the time and percussion aluminium fuze (*Dopp. Z. 96 n/A.*) which is graduated up to 7,000 m. (7,655 yards).

(c.) **Cartridge cases.**—The cartridge case is of brass or steel, or brass with a steel base. The latter type has not proved satisfactory. The charge (1·2 lbs.) consists of a propellant similar to cordite made up in the form of tubes.

8. **The Light Field Howitzer.**—(a.) **The howitzer.**—The light field howitzer (*leichte Feldhaubitze M. 98/09*) is the old 1898 pattern field howitzer entirely remodelled and mounted on a shielded recoil carriage. The principal details are as follows :—

Calibre	4·13 inch (10·5 cm.).
Length of howitzer	14 calibres.
Weight of howitzer in action	22½ cwt.
Weight of carriage	cwt.
Weight limbered up without gunners	37 cwt.
Limits of elevation	− 13°, + 40°
Amount of traverse	4°.
Number of charges	8
Weight of full charge	·8 lb.†
M.V. with full charge	991 f.s.†
Maximum range (time and percussion)—	
With No. 7 charge	6,890 yards.
With No. 8 charge	7,655 yards.

* For further details regarding ammunition and range tables see "Notes on German Shells" (S.S. 420) and "Notes on German Fuzes" (C.D.S. 306).

† These figures refer to Charge No. 7 which is the largest charge ordinarily employed. A new charge, No. 8, has recently been introduced, but its weight is not known.

The howitzer has a single-motion wedge breech with axial striker, and the construction in general is similar to that of the field gun. The bore is rifled with 32 grooves.

(b.) **The carriage.**—The carriage is a shielded recoil carriage. The buffer is on the constant long-recoil system, the cradle being on rear trunnions with a balance spring in front. The wheels are 4 feet in diameter, and the wheel-track is 5 feet.

(c.) **The sights.**—The sighting gear is somewhat more complicated than that of the field gun, but carries a similar panoramic dial sight. The sight bracket has a range drum graduated in metres for each of the 8 charges, so that elevation is given in terms of the range. As in the case of the field gun, slight alterations to the elevation can be made by means of a corrector (*Regler*). Each corrector graduation is equivalent to an alteration of $13\frac{1}{2}$ minutes in the angle of sight.

(d.) **Vehicles.**—The wagon and limber are similar to those of the field gun, except that the shell-baskets are carried upright instead of on their side. Each basket carries two complete rounds, and weighs 79–84 lbs. The limber carries 24 rounds and the wagon (with limber) carries 58.

7. Light field howitzer ammunition.*—(a.) **Projectiles.**—As soon as the existing stocks of universal shell and 1914 pattern H.E. shell are exhausted, only four types of projectile will be in use, viz. :—

1915 pattern H.E. shell, with bursting charge of 3.3 lbs. of amatol.

Long shell, with bursting charge of 4.0 lbs. of amatol.

Gas shell, either asphyxiating or lachrymatory.

1916 pattern shrapnel, containing 300 bullets.

The above shells weigh 34.5 lbs. each.

(b.) **Fuzes.**—Two fuzes are employed with H.E. shell, both of which can be set for delay action. The time and percussion fuze, *H.Z. 05 Gr.*, is made of brass and aluminium, the cap being painted red; it is graduated in metres up to 7,000 m. (7,655 yards). The percussion fuze, *H.Z. 16*, is made of iron and can be set for direct or delay action; shell fitted with this fuze set for delay action are intended either for destructive effect, or for ricochet effect against living targets in the open.

Shrapnel shell are fitted with a time and percussion fuze *H.Z. 05 Schr.*, made of brass and aluminium, and graduated in metres up to 7,000 m. (7,655 yards).

Gas shell are fitted with a direct action percussion fuze, *H.Z. 14*.

(c.) **Cartridge cases.**—The cartridge case is either of brass or steel. The charges of flaked powder (*Würfelpulver*) are made up in bags. Flash reducers are used.

8. Observation wagon and stores.—Every field battery is provided with a 6-horsed observation wagon. This wagon is unlimbered at the observing station and carries a tripod observation ladder with body-shield, admitting of observation from a height of 18 feet above the ground. The observation wagon carries also the "scissors" stereotelescope (*Scherenfernrohr*), range-finder (*Entfernungsmesser*), director (*Richtkreis*) and telephone equipment.

Directors, dial sights, &c., of the field artillery are graduated round the circle from 0 to 6400, the main circle being divided into 64 parts, and the 100ths added by means of a

* For further details regarding ammunition and range tables, see "Notes on German Shells" (S.S. 420), and "Notes on German Fuzes" (C.D.S. 306).

micrometer screw. The smallest division (*Teilstrich*) is equivalent to the French *millième*, i.e., the angle subtended by 1 metre at 1,000 metres (= 3.75 minutes).

In the foot artillery the unit of angular measurement is one-sixteenth of a degree (= 3.75 minutes).

In each field artillery *Abteilung*, and in each battery, there is a telephone squad (*Fernsprech-Trupp*); in peace each telephone squad was equipped with two army telephones and 3,280 yards of army cable, but this allowance has probably been increased.

B.—Foot Artillery.

1. Peace Organization.—Prior to mobilization, the German Army comprised 24 foot artillery regiments (i.e., one per Army Corps District). The regiments were designed for employment as Corps artillery, and were organized as follows:—

Foot Artillery Regiment.



The armament consisted of 15-cm. heavy field howitzers and 21-cm. mortars. Battalions equipped with 21-cm. mortars have only two batteries.

The peace strength of the German heavy artillery amounted to about 400 batteries.

Most of the foot artillery regiments had, in peace, one or two *Bespannungs-Abteilungen* (draught-horse detachments), which were attached in turn to each battery in order to train the personnel for mobile operations.

2. Expansion during the war.—The expansion of the foot artillery has been the most remarkable feature in the increase of the German Army during the war. In December, 1916, there were nearly five times as many heavy batteries as existed in peace.

On mobilization, each active foot artillery regiment formed a reserve regiment which was soon ready to take the field.

As the production of guns increased, each foot artillery regiment also formed a Landwehr regiment, and some of the batteries of the Ersatz (depôt) battalions and Landsturm battalions of regiments have also appeared in the field.

The number of battalions in a regiment has also been raised, some regiments having three, four or even five battalions.

In addition to the batteries belonging to Active, Reserve, Landwehr, Ersatz and Landsturm foot artillery battalions, a number of independently numbered foot artillery batteries were formed in 1915 and 1916, numbered from 101 to 150, and from 200 to 800. A great many of these batteries were equipped with the armament of captured fortresses, or from the fortresses in Germany, and were not horsed. A number were also equipped with the old 9-cm. field gun. Independent battalions, numbered from 21 upwards, were also formed.

During 1916, this series of high-numbered batteries greatly increased, and a new series of foot artillery battalions, numbered from 40 upwards, was formed. These battalions consisted of three or four batteries. Some of their batteries were merely formed by re-numbering existing batteries of the independent series and providing them with horses.

3. Distribution and allotment of foot artillery units.—The numbering and original formation of foot artillery units afford no clue to their distribution in the field.

Foot artillery regiments no longer exist as tactical units, and only remain as part of the designation of batteries. The battalions, also, have been largely broken up, and it is rare to find two batteries working together under their original battalion staff.

These anomalies in organization and command have made it difficult to follow the distribution and allotment of foot artillery units in the field.

The following points are, however, established :—

- (1.) The battery is the tactical unit of foot artillery.
- (2.) Batteries are not permanently allotted to Corps or Divisions, but are allotted to certain sections of the front in accordance with the tactical objectives or the situation of the moment. The normal allotment is eight heavy batteries to a Divisional sector. These batteries form mixed groups with the field batteries.
- (3.) The heavier calibres are grouped together for counter-battery work or special tasks under higher commanders.
- (4.) The other batteries usually come under the orders of the Divisional Artillery Commander in whose sector they are placed. When the Division moves the batteries remain in position.
- (5.) During the latter part of 1916, there was a tendency to revert to a more permanent organization, and a great many independent batteries were grouped together in battalions of three or four batteries.

4. Armament of foot artillery batteries.—The proportion of guns to howitzers in the German foot artillery is—

Guns	..	..	..	..	..	..	25 per cent.
Howitzers..	..	..	..	..	..	..	75 per cent.

The heavy guns in commonest use are—

- 10-cm. (4·1-inch) gun.
- 12-cm. (4·7-inch) gun.
- 13-cm. (5·3-inch) gun.
- 15-cm. (5·9-inch) gun (of various types).

These four calibres are all represented in approximately equal proportions, but there is a tendency to increase the number of 15-cm. high-velocity Naval guns.

A number of foot artillery batteries are armed with the old 9-cm (3·5-inch) field gun ; there are a few batteries of 21-cm., 24-cm. and 38-cm. guns of naval origin on railway mountings.

The calibres of the heavy howitzer batteries have been standardized to a much greater degree than in the case of the heavy gun batteries. The two standard calibres are—

- 15-cm. (5·9-inch) howitzer, forming 50 per cent. of the total armament of the foot artillery.
- 21-cm. (8·3-inch) mortar, forming 25 per cent. of the total armament of the foot artillery.

A few heavy howitzer batteries of 28-cm. (11-inch), 30·5-cm. (12-inch), and 42-cm. (17-inch) calibre exist, but they are comparatively rare.

The Germans, in most cases, use the term "Mortar" (*Mörser*) for howitzers of 21-cm calibre and upwards.

For details of armament, see pages 68 to 73.

5. Organization of foot artillery batteries.—The organization of foot artillery batteries varies very considerably according to the calibre. The majority of batteries consist of 4 guns or howitzers, but in the heavier calibres, *i.e.*, 15-inch high-velocity guns and 21-cm. mortars and upwards, batteries usually consist of only two guns or howitzers; 9-cm. gun batteries have 6, 8 and sometimes 12 guns.

The normal strength of a 15-cm. or 21-cm. battery is 4 officers and 120 other ranks. Batteries do not appear to be horsed in all cases, and, in general, the number of horses has been considerably reduced from the establishment laid down prior to mobilization. In other respects, the normal organization and equipment of heavy batteries does not differ greatly from that of field batteries.

6. The heavy field howitzer.—As stated above, 50 per cent. of the German foot artillery is equipped with 15-cm. heavy field howitzer batteries. There are three patterns of 15-cm. heavy field howitzer (*schwere Feld-Haubitze*); their principal characteristics are given below:—

	Old pattern. (<i>s.F.H.</i>)	1902 pattern. (<i>s.F.H.</i> 02.)	1913 pattern. (<i>s.F.H.</i> 13.)
Calibre	14.97 cm. (5.89").	14.97 cm. (5.89").	14.97 cm. (5.89").
Length of howitzer	10.8 calibres.	12 calibres.	?
Weight of howitzer	21½ cwt.	15½ cwt.	?
Weight of carriage	19 cwt.	23½ cwt.	?
Weight limbered up, without gunners ..	53½ cwt.	53½ cwt.	?
Limits of elevation	+ 65°	+ 42°	+ 45°
Lateral traverse	?	8° 36'	?
Number of charges	7	6	7
Weight of full charge	1.9 lbs.	2.6 lbs.	3.0 lbs.
M.V. with full charge	905 f.s.	1,066 f.s.	1,196 f.s.
Maximum range with full charge	6,616 yards.	8,147 yards.	9,296 yards.

The old pattern howitzer is mounted on an old type of heavy limbered carriage. The recoil is checked by means of tyre brakes, actuated by wire ropes which wind round the inner flanges of the wheels. The howitzer need not be fired from a platform, but in soft ground mats are placed under the wheels and trail.

The 1902 pattern is mounted on a recoil carriage with spade, buffer and running-out springs. The cradle rotates on trunnions placed in front of the carriage axle. The carriage is not shielded.

The howitzer has a single-motion wedge breech action with an axial striker. It is fitted with a dial sight but not with an independent line of sight. The sight is graduated in degrees from 9° to 42°, and also in metres of range for each of the six charges. The howitzer can also be laid by clinometer.

Six gunners are carried on the limber, but no ammunition.

The 1913 pattern is an improved type with increased range and steadiness when firing. The carriage is provided with a shield, and the wheels with belts.

7. Ammunition of the heavy field howitzer.*—(a.) Projectiles.—The projectiles in common use are—

1912 pattern H.E. shell with bursting charge of 13·9 lbs. of picric acid.

1914 pattern H.E. shell with bursting charge of 5·5 lbs. of amatol.

1914A. pattern H.E. shell with bursting charge of 3·1 lbs. of amatol and T.N.T.

Gas shell, either asphyxiating (*K*-shell) or lachrymatory (*T*-shell), and incendiary shell are also fired.

All three patterns of H.E. shell weigh about 92 lbs.; the gas shell weighs about 95·5 lbs. Each shell is packed in a separate basket, the total weight being about 100 lbs.

(b.) **Fuzes.**—The ammunition is issued unfuzed, the fuzes being packed in soldered tin boxes.

A percussion fuze (*Gr. Z. 04*) for both direct and delay action is used with the 1912 pattern H.E. and with gas shell. Direct action percussion fuzes (*Gr. Z. 14*, *Gr. Z. 96/04*, *Gr. Z. 82*, and *H. Z. 14 Vst.*) are used with the 1914 and 1914A pattern H.E. shell.

(c.) **Cartridge cases.**—The cartridge cases are of either brass or steel and are packed in flat baskets. The charges of flaked powder (*Würfelpulver*) are made up in bags. Flash reducers are used.

8. The 21-cm. mortar.—There are two recent patterns of 21-cm. mortar, in addition to various patterns of 21-cm. bronze mortars. The recent patterns are known as *21-cm. Mörser* and *Mörser*, respectively, the latter being the more modern; their principal characteristics are given below :—

	21-cm. Mortar.	Mortar.
Calibre	8·3-inch (21·1-cm.)	8·3-inch (21·1-cm.)
Length of mortar	10 calibres	?
Weight of mortar	59 cwt.	?
Weight of carriage	36 cwt.	?
Weight limbered up without gunners	?	?
Limits of elevation	− 6° + 70°	?
Amount of traverse	?	?
Number of charges	17 (11)‡	9
Weight of full charge	6·8 lbs.	12·3 lbs.
M.V. with full charge	1,010 (1,158)§ f.s.	1,203 (1,332)§ f.s.
Maximum range	8,421 (8,968)§ yards	10,280 (9,952)§ yards.

The 21-cm. Mortar (older pattern).—The carriage is provided with travelling wheels, but in action these are replaced by small firing wheels or trucks, which only project as far as the prolongation of the lower surface of the trail. In action the carriage rests on a plat-

* For further details regarding ammunition and range tables, see "Notes on German Shells" (S.S. 420) and "Notes on German Fuzes" (C.D.S. 306.)

† This shell has recently been found filled with a mixed charge of trinitro-anisol and dinitro-benzene.

‡ 17 charges are used with the 1896 pattern shell, and 11 with the 1914 and 1914 A patterns.

§ The figures in brackets refer to the 1914 and 1914 A pattern shell, the other figures refer to the 1896 and 1896 A pattern shell.

form constructed of two layers of baulks of timber. The recoil is checked by two movable inclined planes, which are placed on either side of the carriage so that the firing trucks have to run up them when the carriage recoils.

For purposes of transport the mortar is dismounted from its firing carriage and placed on a special wagon. The firing carriage, when fitted with its transport wheels, is attached to a special limber.

The Mortar (latest pattern).—This mortar, which is fitted with a “crank breech,” is mounted in a cradle and recoils on its carriage. The cradle rotates on rear trunnions on a small carriage, the latter being pivoted on the carriage proper. The cylinders containing the two hydraulic buffers and the running-out springs are mounted above the mortar.

The gun detachment is protected by a hooded shield. The wheels are provided with “belts” for use on soft ground and when firing; the trail is fitted with a spade. On the march, the mortar is carried on a special wagon.

The sighting arrangements are similar to those of the light field howitzer described on page 65.

9. Ammunition of the 21-cm. Mortar.* (a) **Projectiles.**—The shells used with these mortars are supplied unfuzed, and each shell is packed in a separate basket.

The following patterns of shell are in common use:—

1896 *n/A* pattern H.E. shell with bursting charge of 38·5 lbs. of T.N.T.

1914 pattern H.E. shell with bursting charge of 17·6 lbs. of amatol.

1914 *A* pattern H.E. shell with bursting charge of 13·9 lbs. of amatol.

The 1896 *n/A* pattern weighs about 262 lbs., and the 1914 and 1914 *A* patterns about 184 lbs.

(b) **Fuzes.**—The 1896 *n/A* pattern shell is fitted with a percussion base fuze, *Kz. Bd. Z. 10*, which can be set for either direct or delay action, as can also the percussion fuzes used with the other two patterns of shell, viz.: *Gr. Z. 96/04*, *Gr. Z. 04* and *Gr. Z. 04/14*.

(c.) **Cartridge cases.**—Cartridge cases are of brass and are packed in flat baskets.

10. Howitzers and mortars of 28-cm. and larger calibres.—These include the following:—

28-cm. howitzer on travelling carriage,

28-cm. coast defence howitzer,

30·5-cm. Austrian howitzer,

42-cm. mortar.

Information concerning the projectiles, maximum ranges, &c., of these weapons, is contained in “Notes on German Shells” (S.S. 420).

11. The 10-cm. Gun.—(a.) **The Gun.**—There are three varieties of the 10-cm. gun, known as *10 cm. Kanone*, *10 cm. Kanone 04* and *10 cm. Kanone 04/14*; these are all long-range, high-velocity, Q.F. guns.

* For further details regarding ammunition and range tables, see “Notes on German Shells” (S.S. 420) and “Notes on German Fuzes” (C.D.S. 306).

The principal details of the '04 pattern gun are as follows.—

Calibre	..	..	..	..	..	..	4·13-inch (10·5 cm.).
Length of gun	..	..	..	..	..	..	30 calibres.
Weight of gun	..	..	..	..	..	..	26½ cwt.
Weight of carriage	..	..	..	..	..	..	27½ cwt.
Weight limbered up without gunners	..	..	..	..	..	..	69 cwt.
Limits of elevation	..	..	..	..	..	..	— 5°, + 30°.
Amount of traverse	..	..	..	..	..	..	3° 56'.
Weight of charge	..	..	..	..	..	..	5 lbs.
Muzzle velocity	..	..	..	..	..	..	1,830 f.s.
Maximum percussion range	..	..	..	..	..	..	11,264 yards.

(b.) **The carriage.**—The breech is of the single-motion vertical wedge pattern. The firing device consists of a striker actuated by a lever and counter spring.

The gun is mounted on a recoil carriage fitted with a hydraulic buffer, running-out springs, and trail with spade. The buffer is below the gun and is pivoted on a cradle; the trunnions of the latter being in front of the axle of the carriage. There is no shield.

(c.) **The sights.**—The sighting arrangements are similar to those of the 7·7-cm. field gun (*see* page 63).

12. Ammunition of the 10-cm. gun.*—(a.) Projectiles.—Fixed ammunition is used, the weight of a complete round being approximately 53 lbs. The projectiles in common use are as follows:—

- 1914 pattern H.E. shell† with bursting charge of 1·98 lbs. of amatol.
- 1914 A pattern H.E. shell† with bursting charge of 1·54 lbs. of amatol.
- 1896 pattern shrapnel.

Each of the above projectiles weighs 39·5 lbs.

(b.) **Fuzes.**—A direct action percussion fuze, *H. Z. 14 Vst.*, is used with the H.E. shell, and a time and percussion fuze, *Dopp. Z. 92 f. 10 cm. K.* or *Dopp. Z. 92 K. 15*, which is graduated in seconds, with the shrapnel.

(c.) **Cartridge cases.**—The cartridge cases are of brass.

13. The 13-cm. Gun.—(a.) The gun.—The 13-cm. gun is a modern, long-range, high-velocity Q.F. gun which was introduced to replace the 15-cm. long gun. The principal details are given below:—

Calibre	..	..	..	..	..	5·31-inch (13·5 cm.)
Length of gun	..	..	..	..	..
Weight of gun in action	..	..	..	..	..	114 cwt.
Weight of carriage	..	..	..	..	..	55 cwt.

* For further details regarding ammunition and range tables, *see* "Notes on German Shells" (S.S. 420), and "Notes on German Fuzes" (S.S. 306).

† Possibly the 1896 pattern H.E. shell (bursting charge 4·85 lbs. of T.N.T. or picric acid) is still used. The percussion fuze, *Gr. Z. 04*, employed with it can be set for either direct or delay action.

Limits of elevation	+ 26°
Amount of traverse	
Weight of charge	21·6 lbs.
Muzzle velocity	2,280 f.s.
Maximum range—	
Percussion (H.E. shell)	15,748 yards.
Time (shrapnel)	10,936 yards.

The gun is fitted with a single-motion wedge breech, provided with a safety lever, and is fired by a self-cocking axial striker.

(b) **The carriage.**—The gun is mounted on a shielded recoil carriage, fitted with hydraulic buffer and running-out springs, which are contained in the cradle and situated beneath the gun. The trunnions of the cradle are in front of the axle of the carriage. The trail is provided with a small fixed spade and a larger hinged spade. The wheels are of steel and are fitted with “belts” for use on soft ground and when firing.

On the march the gun is carried on a special carriage.

(c.) **The Sights.**—The sighting arrangements are similar to those of the 7·7-cm. field gun (*see* page 63).

14. **Ammunition of the 13-cm. gun.*—(a.) Projectiles.**—Shell and cartridge are separate. The projectiles in common use are as follows:—

- 13-cm. H.E. shell; with bursting charge of 8·8 lbs. of T.N.T.
- 1914 pattern H.E. shell, with bursting charge of 3·5 lbs. of T.N.T.
- 13-cm. shrapnel.

The above projectiles weigh about 89 lbs. each.

(b.) **Fuzes.**—The 13-cm. H.E. shell is fitted with a base fuze, *Lg Bd. Z. 10*, which can be set for either direct or delay action.

The 1914 pattern shell is fitted with a direct action percussion fuze, *Gr. Z. 14*.

The shrapnel is fitted with a time and percussion fuze, *Dopp. Z. 92 f. 10-cm. K. (or Dopp. Z. 92 K. 15)*, graduated up to 26 seconds.

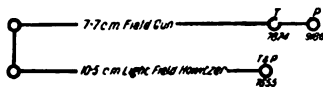
(c.) **Cartridge cases.**—These are of brass.

15. **Older patterns of guns employed by the foot artillery.**—In addition to the modern 10-cm. and 13-cm. guns, a certain number of foot artillery batteries are armed with guns of older patterns. Particulars of those which are most commonly in use are given in the table below; all four types are mounted on old-fashioned non-recoil carriages.

* For further details regarding ammunition and range tables, *see* “Notes on German Shells” (S.S. 420) and “Notes on German Fuzes” (C.D.S. 306).

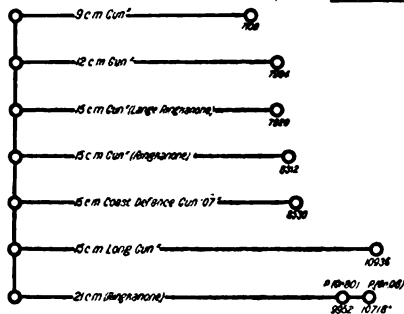
MAXIMUM RANGES OF GERMAN GUNS, HOWITZERS AND MORTARS.

FIELD ARTILLERY.



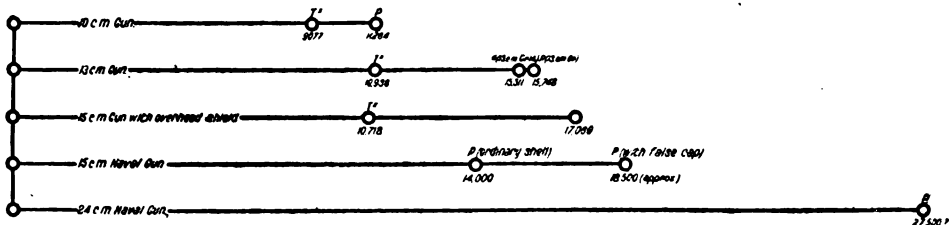
FOOT ARTILLERY

MEDIUM RANGE GUNS



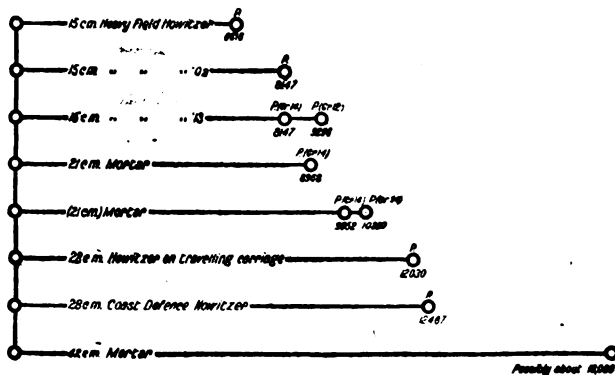
* Using Dopp Z.92 lg Brlg fuze, the maximum range would be the same for time as for percussion effect

HIGH VELOCITY & LONG RANGE GUNS



* Using Dopp Z.92 lg Brlg, these ranges may be greater

HOWITZERS & MORTARS



Maximum Ranges in Yards
T = with time fuze
P = with percussion fuze

Particulars of German Guns of Older Patterns.

	9-cm. field gun 73/88.	12-cm. heavy gun.	15-cm. gun with chase rings (<i>Ringkanone</i>).	15-cm. long gun.
Calibre	8·8 cm.	12·03 cm.	14·97 cm.	14·97 cm.
Length of gun	23·9 calibres	23·4 calibres	23 calibres	30 calibres
Weight of gun	8½ cwt.	25½ cwt.	61½ cwt.	66½ cwt.
Weight of carriage	16 cwt.	22½ cwt.	37½ cwt.	52 cwt.
Weight limbered up without gunners.	..	66½ cwt.	..	76 cwt.
Limits of elevation.. .. .	-10° +41°	-5° +40°	-5° +35° and +37°	-4° +40°
Weight of charge (single charge of flaked powder, similar to cordite, contained in bag).	1·5 lbs.	2·9 lbs.	6 lbs.	8·8 lbs.
Muzzle velocity	1,450 f.s.	1,280 f.s.	1,499 f.s.	1,640 f.s.
Maximum range—				
Time	7,109 yards	7,218 yards	7,546 yards	8,969 yards
Percussion	7,100 yards	7,984 yards	8,312 yards	10,936 yards

16. Long-range guns.—A recent feature of German artillery development has been the increasing use of long-range guns, which are usually on railway mountings. The majority of these are naval guns, apparently not of the latest pattern; the calibres used against the British front include 15-cm., 24-cm. and 38-cm.

The 15-cm. naval gun is the most frequently employed, an ordinary high-explosive shell being used at ranges up to 13,000 yards, and a high-explosive shell with false cap at longer ranges. These shells weigh 88 lbs. and 94·5 lbs. respectively, and each contains a bursting charge of 9·7 lbs. of T.N.T.; the former shell is fitted with a time and percussion fuze, *Dopp. Z. S/43*, the latter with a percussion fuze. The maximum range hitherto reported is 18,700 yards.

The 24-cm. naval gun also fires two types of shell, viz., a high-explosive shell with false cap and an extremely tapered high-explosive shell, which latter is a further development of the false cap type. The latter shell weighs 325 lbs. and contains a bursting charge of 33 lbs. of T.N.T.; it is fitted with a delay action base fuze marked *Spgr. m. K*. The maximum range hitherto reported is 27,500 yards.

The 38-cm. naval gun has occasionally been employed against the British front, firing a high-explosive shell with false cap.

In addition to the above, an old pattern **naval 21-cm. gun** is occasionally employed. The shell, which weighs about 220 lbs., has a false cap, contains a bursting charge of 13·1 lbs. of T.N.T., and is fitted with a delay action base fuze marked *Spgr. m. K*. The maximum range hitherto reported is 20,000 yards.

C.—Mountain Artillery.

No mountain artillery units existed in peace, although the requisite material was available to form several batteries. About 20 mountain batteries have been created during the war. They are grouped in *Abteilungen* of 3 batteries each, and are allotted to Divisions

operating in the Balkans, Carpathians and Vosges. The personnel of mountain batteries is drawn mainly from the mountainous districts of Bavaria, Württemberg and Baden.

A mountain gun battery (*Gebirgskanonen-Batterie*) consists of four 7.5-cm. quick-firing mountain guns. The gun has a single-motion wedge breech action and fires both shrapnel and H.E. shell. The recoil buffer is placed beneath the gun.

Mountain batteries are organized for pack transport. The gun and breech-block form one load.

A few mountain batteries are armed with mountain howitzers.

D.—Trench Artillery.

The German trench artillery consists of trench mortars and trench guns. In principle, trench mortars are served by pioneers, and trench guns by artillerymen, but in practice the personnel is largely drawn from the infantry.

Every infantry battalion will shortly be provided with a *Minenwerfer* section, equipped with 4 (eventually 8) light *Minenwerfer*.

1. **Trench mortars.**—The German trench mortars which are most frequently employed are:—

—	Weight of Mortar.	Calibre.	Weight of H.E. projectile.	Weight of bursting charge.	Minimum and maximum ranges.
	lbs.	inches.	lbs.	lbs.	yards.
25-cm. heavy <i>Minenwerfer</i>	1,389	9.8	207½ 134½ 106	103½ 44 27½	186—418* 262—919 328—1,303*
17-cm. medium <i>Minenwerfer</i>	1,146	6.7	109	26½	116—1,006
7.6-cm. light <i>Minenwerfer</i>	324	3.0	10	1½	175—1,148
9.2-cm. <i>Lanz Minenwerfer</i> (smooth bore.)	..	3.5	8½	½	137—492
24-cm. heavy <i>Ladungswerfer</i> .. ..	..	9.5	44 66 88	30 48 60	38—290 27—208 22—175
<i>Granatenwerfer</i> ("stirk" bomb-thrower) ..	89	..	4	½	66—208

The first three are the regulation rifled trench mortars which form the armament of the *Minenwerfer* companies.

All these trench mortars fire H.E. projectiles, and the medium, light and *Lanz Minenwerfer* employ gas shell as well.

There are also a number of improvised (*behelfsmässige*) trench mortars, such as the *Albrecht-Mörser* and the *Erd-Mörser*.

2. **Minenwerfer Companies.**—Every Division has a *Minenwerfer* company permanently allotted to it. These companies are in general numbered on a regular system:—

Each Active Division has a *Minenwerfer* company bearing the same number (e.g., the 7th Division has the 7th *Minenwerfer* Company).

* The minimum and maximum ranges are less and greater respectively.

Each Reserve Division has a *Minenwerfer* company bearing the same number + 200 (e.g., the 7th Reserve Division has the 207th *Minenwerfer* Company).

Each Landwehr Division has a *Minenwerfer* company bearing the same number + 300 (e.g., the 7th Landwehr Division has the 307th *Minenwerfer* Company).

Each New-Formation Division has a *Minenwerfer* company having the same number + 210 (e.g., the 221st Division has the 431st *Minenwerfer* Company).

A *Minenwerfer* Company is organized in two sections, heavy and medium, armed respectively with four heavy and eight medium *Minenwerfer*. Each section (*Zug*) is divided into sub-sections (*Trupps*), one for each *Minenwerfer*. A sub-section consists of two non-commissioned officers and seven to nine men.

Until the light *Minenwerfer* have been issued to infantry battalions, *Minenwerfer* companies will remain equipped with 3 heavy, 6 medium and 12 light *Minenwerfer*.

There are also a few Mountain *Minenwerfer* companies, numbered from 170 to 175, mainly employed on the Eastern Front, and provided with pack animals and vehicles suitable for mountain transport. A mountain *Minenwerfer* company is equipped with four medium and eight light *Minenwerfer*.

3. *Minenwerfer* Battalions.—In addition to the Divisional and mountain *Minenwerfer* companies, there exist 7 *Minenwerfer* battalions, which form a reserve at the disposal of General Headquarters, and are used to reinforce particular sectors.

A *Minenwerfer* battalion consists of—

4 companies, each equipped with six heavy and four light *Minenwerfer*.

Draught-horse detachment (*Bespannungsabteilung*).

Mechanical transport échelon (*Kraftwagenstaffel*).

The central *Minenwerfer* school is at Markendorf (near Jüterbog), and there are at least 7 *Minenwerfer* depôts in Germany for the training of personnel.

4. Trench guns.—A certain number of light field or fortress guns are employed by the Germans for defensive purposes in trench warfare. It is probable that this form of defence will be further developed in the future with a view to repelling "Tanks."

These guns are organized in detachments and batteries, and are attached more or less permanently to the sectors held by infantry regiments. The personnel consists partly of infantrymen and partly of artillerymen. The guns employed are principally 3·7-cm. revolver guns, 5·3-cm. German, 5·7-cm. German, Russian and Belgian fortress guns, and 7·62-cm. "Infantry" guns. The Naval *Bootskanonen* are also used in this way.

The units of this nature identified up to the end of 1916 consist of—

15 revolver-gun detachments and batteries.

18 trench-gun detachments (*Schützengrabenkanonen-Abteilungen*).

9 "infantry-gun" batteries (*Infanterie-Geschütz-Batterien*).

E.—Ammunition Supply.

1. **First line.**—(a.) Each infantry battalion is accompanied by four company small-arm ammunition carts (*Kompagnie-Patronen-Wagen*), each carrying 14,400 rounds.

(b.) Each Field Artillery *Abteilung* is accompanied by a light ammunition column (*leichte Munitionskolonne* or *leichte Feldhaubitze-Munitionskolonne*), consisting of—

- 24 ammunition wagons (4-horsed).
- 1 store wagon (4-horsed).
- 1 travelling kitchen (2-horsed).

Light ammunition columns refill from the (Divisional) ammunition columns (*see para. 2*).

(c.) Each Horse Artillery *Abteilung* (with a Cavalry Division) is accompanied by a light ammunition column consisting of—

- 14 ammunition wagons.*
- 7 small-arm ammunition wagons.
- 1 supply wagon.
- 1 store wagon.
- 2 forage wagons.
- 1 travelling kitchen.

(d.) Each Foot Artillery battery is accompanied by a foot artillery battery ammunition column (12 ammunition wagons), which replenishes its supply from the foot artillery ammunition columns; these latter form Corps or Army Troops, and have either horsed or mechanical transport according to the calibre of the batteries which they supply. A horsed foot artillery ammunition column normally consists of—

- 17 ammunition wagons.*
- 1 store wagon.
- 1 forage wagon.
- 1 smith's wagon.

2. **Divisional ammunition columns.**—Each Division is provided with—

(a.) 2 infantry ammunition columns, and

(b.) 3 or 4 artillery ammunition columns (one of which is a field howitzer ammunition column). There is one artillery ammunition column for each field artillery *Abteilung* in the Division.

These ammunition columns form part of the Divisional train echelons (*Staffel*), the organization of which is described in Chapter XI.

(a.) Formerly, one infantry ammunition column was 6-horsed and the other was 4-horsed, but in April, 1916, they were all reduced to the 4-horse establishment.

* It is not known whether the number of horses has been reduced. In peace the ammunition wagons had 6 horses, according to establishment.

The infantry ammunition columns are composed as follows :—

1st Infantry Ammunition Column.	2nd Infantry Ammunition Column.	Vehicles.
23 2 1 1	34 2 1 1	Small-arm ammunition wagons. Store wagons. Field forge. Travelling kitchen.

(b.) The artillery ammunition columns are composed as follows :—

21 ammunition wagons (4-horsed).
2 store wagons (4-horsed).
1 travelling kitchen (2-horsed).

The artillery and infantry ammunition columns of a Division refill at the Divisional railroad, which is replenished from the L. of C.

3. **Chain of ammunition supply.**—The following table shows the chain of ammunition supply for a field battery (gun and howitzer) :—

Where carried.	Number of rounds per gun.	Number of rounds per howitzer.
Firing battery and first line transport. { 4 gun-limbers, each 36 rounds (<i>howr.</i> 24) 4 wagons bodies, each 54 rounds (<i>howr.</i> 32) .. 4 wagon limbers, each 36 rounds (<i>howr.</i> 26) .. limber of store wagon, 36 rounds (<i>howr.</i> 26) ..	36 54 36 9 } 135	24 32 26 6 } 88
Light ammunition column (24 wagons)	179	116
Artillery ammunition column (21 wagons)	158	101
Total carried in Division	472	305

4. **Expenditure of ammunition.**—During the first period of the Somme offensive, General v. Stein (Commanding "A" Group, First German Army) reports his expenditure to have been as follows :—

(a.) *Average daily expenditure during the artillery duel from the 24th to 30th June, 1916.*

	Rounds.
Field gun battery	1,500
Light field howitzer battery	1,050
Heavy field howitzer battery	520
21-cn. mortar battery (two mortars)	200

(b.) *Average expenditure on the 1st July, 1916, the day of the infantry attack.*

	Rounds.
Field gun battery	2,270
Light field howitzer battery	1,800
Heavy field howitzer battery	940
21-cm. mortar battery (two mortars)	400

(c.) *Specially high expenditure by individual batteries on individual days.*

	Rounds.
Field gun battery	over 4,500
Light field howitzer battery	3,000
Heavy field howitzer battery	1,200
21-cm. mortar battery (two mortars)	500

5. **Ammunition reserves.**—After the July fighting on the Somme, General Sixt v. Arnin (commanding "B" Group, First German Army) reported that he considered the following quantities of ammunition to be necessary :—

Battery.	*In the battery position.	In reserve with the Division.	In reserve with the Corps.
	Rounds.	Rounds.	Rounds.
Field gun	2,200	500	2,200
Light field howitzer	2,200	500	2,200
10-cm. gun	1,600	400	1,600
Heavy field howitzer	1,400	300	1,400
21-cm. mortar (2 mortars)	300	80	300

Finally, General v. Stein (Commanding "A" Group, First German Army) reported in September, 1916, that he considered it essential that the following amounts should be maintained in the battery positions :—

	Rounds.
Field gun battery	3,000 to 3,500
Light field howitzer battery	3,000
10-cm. gun battery	—
Heavy field howitzer battery	1,500 and 300 T gas shell.
21-cm. mortar battery (two mortars)	500

These amounts are almost double those which were considered adequate early in 1916.

Batteries to which ammunition could be brought up by day could manage with a smaller "iron ration," but General v. Stein considered it essential that the whole of the Divisional ammunition columns should be kept filled, the Corps reserve being regulated according to the facilities for bringing up supplies from the Army to the Corps.

* This stock would only be maintained in the battery position in the event of active operations. Under normal conditions a reserve of 1,500 rounds is stored in or close to each field battery.

CHAPTER IX.

TECHNICAL TROOPS.

Engineers, Pioneers, Signal Service, Communication Troops and Survey Units.

General.—Duties corresponding to those of the Royal Engineers in the British Army are divided in the German Army between—

- A.—(1.) The Corps of Engineers (*Ingenieur-Korps*).
- (2.) Fortress Construction Officers (*Festungsbau-Offiziere*).
- B.—The Corps of Pioneers (*Pionier-Korps*).
- C.—The Signal Service.
- D.—Communication Troops (*Verkehrs-Truppen*).
- E.—Survey Units.

A (1) and (2) and B are distinct corps, but all three are under the Chief of the Engineer and Pioneer Services (*Chef des Ingenieur- und Pionier-Wesens*).

A.—The Corps of Engineers (and Fortress Construction Officers).

The Corps of Engineers consists only of officers, who are engaged solely in the design, construction, maintenance and organization of fortresses. Engineer and pioneer officers receive the same training and are interchangeable from one service to the other.

Fortress construction officers are promoted from among qualified pioneer non-commissioned officers who undergo a special course of training.

B.—The Corps of Pioneers.

1. **General.**—The Corps of Pioneers carries out all the work connected with field engineering, and comprises the following units :—

- Field companies.
- Mining companies.
- Bridging trains.
- Searchlight sections.
- Park companies.

The Corps of Pioneers also furnishes the personnel for trench mortar units (*see* page 74) and for the manipulation of flame-projectors and gas.

A certain number of electro-technical units are also formed by pioneers for the purpose of constructing and running electric power and light installations close to the firing line. These units are generally formed locally as Corps or Divisional troops and are variously known as—

- Starkstrom-Abteilungen.*
- Hochspannungs-Abteilungen.*
- Elektrotechnische Abteilungen.*
- Elektriker-Trupps.*

2. **Pioneer Battalions.**—The establishment of pioneers in peace, apart from bridging and searchlight units, was one battalion of four companies in each Army Corps and eight battalions of fortress engineers. Attached to the Guard Pioneer Battalion was an experimental company (*Pionier Versuchs-Kompagnie*).

On mobilization, each of the Corps battalions was expanded by means of two reserve companies into two battalions; the first battalion was allotted to the Active Corps, and consisted of the 1st, 2nd and 3rd Active field companies, while the second battalion was allotted to the Reserve Corps, and consisted of the 4th Active field company and the 1st and 2nd reserve companies. The normal allotment of pioneers to a Corps was, therefore, at the beginning of the war, three companies.

Seven reserve pioneer battalions have been formed during the war, each consisting of three or four companies.

Pioneer battalions no longer exist as units in the field, though the name is retained in the designation of the field companies.

3. Pioneer Regiments.—The eight fortress battalions (Königsberg, Posen, Cologne, Ehrenbreitstein, Strassburg, Metz, Mainz and Graudenz), which existed in peace, were expanded into 10 pioneer regiments, numbered 18, 19, 20, 23, 24, 25, 29, 30, 31, and Bavarian. Each pioneer regiment consists of four to six field companies and a park company, in addition to several reserve and Ersatz companies.

The pioneer regiments have been split up during the war and their companies allotted to different sectors as Army troops. The companies of pioneer regiments are usually employed on special technical tasks such as mining or electrical work, while the companies of pioneer battalions are used exclusively on field works.

During the war, three new pioneer regiments have been formed, namely the Guard Reserve Pioneer Regiment and the 35th and 36th Pioneer Regiments. These units are employed in manipulating flame-projectors and gas.

Each pioneer regiment comprises a siege train (*Belagerungstrain*) and a park company.

4. Pioneer Field Companies.—The Reserve and Reconstituted Divisions formed in 1914 and 1915 were each provided with either one or two Divisional pioneer companies, and this number was, in many cases, increased by the addition of Ersatz and Landwehr units. The New-Formation Divisions have all been provided with independent pioneer companies. By the end of 1916, the number of field companies in the German Army had risen to 600, so that three companies were available for each Division, instead of the three per Corps which were available on mobilization.

The establishment of a pioneer field company is—

- 4 officers.
- 1 medical officer and 1 paymaster.
- 262 other ranks.
- 20 horses.
- 7 vehicles.

A field company is organized in three sections (*Züge*), which can act independently. No bridging material is carried.

The horses and transport drivers are provided by the Train. The transport is as follows—

- | | |
|--|---------------|
| 1 pioneer store wagon (<i>Gerätewagen</i>) (4-horsed). | } (2-horsed). |
| 3 pioneer store wagons | |
| 1 baggage wagon | |
| 1 supply wagon | |
| 1 travelling kitchen | |
| 1 pack horse | |

The armament and equipment of field pioneers is the same as that of the infantry (see pp. 42-45), except that long-handled spades are carried instead of the small entrenching tool, and the sword-bayonet is of a special pattern with a saw-back. The ammunition pouches are also different. (See Plate 9.)

5. Mining Companies.—In peace, mining was only practised by the fortress pioneer battalions, and when trench warfare commenced at the end of 1914, mining operations were usually undertaken by the Army troops companies of pioneer regiments (see paragraph 3). These companies were gradually supplemented by trained miners withdrawn from the infantry, and tunnelling companies (*Berg- or Stollenbau-Kompagnien*) were improvised under Divisional or regimental arrangements.

It was not until 1916 that a regular series of pioneer mining companies was created. The Prussian, Saxon and Württemberg companies (*Pionier-Mineur-Kompagnien*) were numbered from 291 to 330, and the Bavarian companies (*Mineur-Kompagnien*) from 1 to 8. These units are more or less permanently allotted to sectors of the front, so that continuity in mining policy is obtained. Mining operations are controlled by the Divisional Commander of the sector in which they take place, but the engineer officer on the spot is authorized to blow mines on his own initiative when the situation requires such action.

The establishment of a mining company is 4 officers and about 250 other ranks.

6. Bridging Trains.—(a.) **A Divisional Bridging Train** (*Divisions-Brücken-Train*) forms part of every Division. The bridging train is attached to the Divisional pioneers, but the personnel and horses are all drawn from the Train.

The bridging train is organized in two sections and a reserve section.

The establishment of a Divisional bridging train is—

- 2 officers.
- 59 other ranks.
- 98 horses.
- 21 vehicles.

The bridging material is carried on—

- 12 pontoon wagons (each carrying a half-pontoon).
- 2 trestle wagons.
- 1 shore transom wagon.

These wagons are 4-horsed.

The six pontoons of a Divisional bridging train are of galvanized steel and are bipartite. The bow pieces have a raised bow to give extra safety in rough water. Both bow and stern pieces are 14 feet 9 inches long, 4 feet 7 inches wide, and 2 feet 9½ inches deep internally. The bow piece weighs 661 lbs. and the stern piece 683 lbs. The freeboard (amidships) of the bipartite pontoon varies from 31 inches (unloaded) to 3½ inches (with a load of 7½ tons).

(b.) **A Corps Bridging Train** (*Korps-Brücken-Train*) is attached to the Headquarters of every Corps. It is organized in two half-columns and a reserve section and has a pioneer detachment of 2 officers and 64 other ranks.

The establishment of a Corps bridging train is—

2 officers	}	pioneers.
54 other ranks		
4 officers	}	train.
138 other ranks		
1 medical officer, 1 veterinary officer, 1 paymaster.		
239 horses.		
39 vehicles.		

The bridging material is carried on—

26 pontoon wagons (each carrying 1 whole pontoon).
2 trestle wagons.

These wagons are 6-horsed, but the establishment of horses is believed to have been reduced recently

The 26 pontoons carried by a Corps bridging train are galvanized steel whole pontoons, 26½ feet long, 4 feet 11 inches wide, and 2 feet 9½ inches deep internally, weighing about 1,102 lbs. The bow and stern are similar to those of the bipartite pontoon, and their buoyancy is practically the same.

(c.) **Bridging capacity.**—Normal bridge is designed to take all weights up to 3·14 tons. For 21-cm. mortars, long 15-cm. guns and all vehicles weighing between 3·14 and 4·92 tons, normal bridge is strengthened by doubling the baulks under the wheel tracks. For the army mechanical transport trains (greatest weight on each back wheel of tractor, 3½ tons) the bridge must be constructed with twice the number of pontoons required for normal bridge, the number of baulks is increased from five to nine and the chesses are doubled.

This type of heavy bridge may be used by fully loaded mechanical transport trains across rivers with a velocity not exceeding 5·1 miles an hour.

The bridging capacity of the Divisional and Corps bridging trains is as follows:—

Nature of bridging train.	Bridge.			Time of construction.	Number of pioneer companies required.
	Light.	Normal.	Heavy.		
	yards.	yards.	yards.	hours.	
1 Divisional bridging train	65·6	38·3	21·9	½-1	½-1
2 Divisional bridging trains	131·2	76·6	43·7	2	½-1
1 Corps bridging train	185·9	142·2	82	3	1-2
1 Corps and 2 Divisional bridging trains ..	328	218·7	131·2	5	2
1 Corps and 3 Divisional bridging trains ..	393·7	251·5	153·1	5	2
1 Corps and 4 Divisional bridging trains ..	459·3	295·3	175	6	2-3

The pontoon equipments can be used as rafts and flying bridges, capable of ferrying heavy guns and army mechanical transport.

7. Searchlight Sections.—On mobilization, the searchlight units consisted of one field searchlight section (*Scheinwerferzug*) attached to each of the 26 pioneer battalions of the Active Corps, and one fortress searchlight section with each of the 10 fortress pioneer regiments.

A number of the Reserve Corps formed during 1914 and 1915 were provided with reserve searchlight sections, and the majority of the fortress sections have appeared in the field.

The above units are Corps troops.

In addition to the sections attached to Corps, a series of Divisional searchlight sections have been formed during the war, mainly numbered between 200 and 350.

The normal establishment of a searchlight section is—

- 2 officers.
- 38 other ranks.
- 25 horses.
- 7 vehicles.

The technical equipment comprises—

- (a.) *Heavy* 90-cm. electric-light projector, with motor, dynamo and scaffolding, the whole being transported on three vehicles.
- (b.) *Light* 60-cm. electric-light projector, carried in trunnions on a telescopic mast mounted on a limbered wagon. The dynamo, which is carried on the limber, is driven by a 6-h.p. motor. The total weight behind the team is about 35 cwt.
- (c.) *Portable* searchlights, of which there are two patterns. One has an electric-light projector of 25 to 35-cm. diameter. The other, which is the more common type, has an oxy-acetylene (*A.S.*) projector of 25 or 30-cm. diameter. Both of these patterns can be carried on a man's back.

A Divisional searchlight section is usually equipped with two light and four portable searchlights.

8. Park Companies.—Pioneer park companies are composed of men of the Armed Landsturm (*see* page 101). They are attached to Armies as required, and are employed in handling pioneer stores at the railheads and at the large pioneer depôts on the lines of communication. In all, 55 pioneer park companies have been identified.

C.—The Signal Service.

The personnel of the Signal Service is found by the Telegraph Troops (*Telegraph-Truppen*). In peace these consisted of—

- 6 Prussian telegraph battalions and 7 fortress telephone companies
- 1 Saxon telegraph battalion and 1 fortress telephone company.
- 1 Württemberg telegraph battalion and 1 fortress telephone company.
- 2 Bavarian telegraph battalions.

The officers were drawn mostly from the engineers and pioneers, some from the infantry and railway troops. The uniform of the telegraph troops is similar to that worn by the pioneers, but a shako is worn, and the shoulder straps bear a "T."

In January, 1917, the telegraph troops were separated from the communication troops, to which they formerly belonged, and were organized as a separate corps under the

Director of Signals (*Chef des Feldtelegraphwesens*). The Director of Signals also controls the telegraph and telephone systems in Germany.

In war, the telegraph troops are organized as follows :—

(a.) A **Lines of Communication Telegraph Directorate** (*Etappen-Telegraph-Direktion*) connects the headquarters of each Army with its Lines of Communication, using the permanent telegraph and telephone system. The instruments used are the "telewriter" (*Fernschreiber*), with a speed of 3,000 words an hour, and the Siemens mechanical telegraph (*Schnelltelegraph*) with a speed of 24,000—30,000 words an hour.

(b.) An **Army Telephone Detachment** (*Armee-Fernsprech-Abteilung*) connects Army and Corps Headquarters. This unit comprises—

- 7 construction sections (*Bauzüge*).
- 1 headquarters section (*Betriebszug*).
- 1 office section (*Stationszug*).

The transport consists of motor lorries.

(c.) A **Corps Telephone Detachment** (*Korps-Fernsprech-Abteilung*) connects Corps Headquarters with Divisional Headquarters. During trench warfare, the Corps telephone detachment lays the lines as far forward as required by headquarters. A Corps telephone detachment consists of five or six sections, including one or two motor lorry sections. Both air-line and cable are used. Each section carries 40 kilometres of cable, and can lay it at the rate of 1 kilometre in 30 minutes.

(d.) A **Divisional Telephone Detachment** (*Fernsprech-Doppelzug*) connects Divisional Headquarters with brigades and regiments. Each detachment consists of two sections similar to those of the Corps telephone detachment, each carrying 40 kilometres of cable, and each capable of establishing 16 offices. Both air-line and cable are used.

Attached to the Divisional telephone detachment are usually two visual signalling sections (*Lichtsignaltrupps* or *Feldsignaltrupps*) provided with lamp signalling apparatus.

(e.) **Wireless Stations** (*Funken-Stationen*) are allotted as required to Armies, Corps, Infantry and Cavalry Divisions. The stations are light or heavy, according to requirements. The heavy station can be set up in 10 minutes and has a radius of 200 kilometres. The light station can be set up in 5 minutes and has a radius of 80 kilometres.

In addition to these there is a wireless headquarter-section (*Funker-Kommando*) at the headquarters of every Army; this unit controls the wireless stations in the Army, and acts as a school of instruction.

During the Somme battle the use of trench wireless sets (*Kleinfunken-Stationen*) was greatly developed, and by the end of 1916 every Divisional sector on the Somme front had at least one forward station.

The *Telefunken* wireless system is used.

(f.) Travelling **Carrier Pigeon Stations** (*fahrbare Brieftauben-Stationen*) are attached to Divisions and Corps as required, but no definite establishment has yet been identified.

(g.) **Listening Sets** for the interception of telephone messages are probably controlled by the Army or Corps telephone detachments. These instruments are on the Ahrendt system, and are known as "*Moritz*."

D.—Communication Troops.

The Communication Troops (*Verkehrstruppen*) form the personnel of—

1. The Railway Service.
2. Mechanical Transport.

1. The **Railway Troops** consisted in peace of—

- 3 Prussian railway regiments (each of eight companies).
- 1 Prussian railway battalion (of four companies).
- 1 Bavarian railway battalion (of three companies).
- 3 railway traffic companies, working the military line from Berlin to Jüterbog.

In war, the traffic on the lines in Germany is maintained by the civil administration in conjunction with the "Line Commands" (*Linien-Kommandanturen*), of which 26 existed in peace.

All the railways in the occupied territories and zone of the armies are under the control of the Director of Railways (*Chef des Feld-eisenbahnwesens*). Under this officer are placed the main Military Railway Directorates (*Militär-Eisenbahn-Direktionen*), which are located as follows:—

<i>Western Theatre.</i>				<i>Eastern Theatre.</i>			
Director-General of Military Railways	..	..	Brussels.	Director-General of Military Railways	..	..	Warsaw.
M.E.D. I.	..	..	Lille.	M.E.D. IV.	..	..	Lodz.
M.E.D. II.	..	..	Sedan.	M.E.D. V..	..	..	Vilna.
M.E.D. III.	..	..	Charleroi.	M.E.D. VI.	..	..	Brest-Litovsk.
				M.E.D. VII.	..	..	Semendria.
				M.E.D. VIII.	..	..	Radschiwiski.
				M.E.D. IX.	..	..	Rumania.

At the principal railway junctions in the zone of the armies there are established railway traffic offices (*Eisenbahn-Betriebsämter*), of which 50 have been identified. In connection with many of these there is also a locomotive office (*Maschinen-Amt*) and a railway workshop office.

The railway personnel is organized in—

- (a.) Railway construction companies (*Eisenbahn-Bau-Kompagnien*). These include, at least, 40 Active, 61 Reserve, 7 Landwehr, 1 Landsturm and 15 Fortress construction companies.
- (b.) Railway traffic companies (*Eisenbahn-Betriebs-Kompagnien*). These include, at least, 100 Active and 7 Fortress traffic companies.

There are also 5 railway workmen battalions, 4 supplementary battalions and 23 railway store companies.

At least 13 armoured trains (*Panzerzüge*) are known to exist.

Each railway construction and traffic company is affiliated to the depôt of the railway regiment from which it was formed, and wears the number of that regiment on the shoulder straps in Roman numerals under the "E," which distinguishes the railway troops.

Railway troops wear the Guard *Litzen* on collar and cuffs.

2. **Mechanical Transport.**—In peace, the mechanical transport and the air service were jointly under the control of the Inspector of Military Aircraft and Mechanical Transport Services, but these services have been completely separated during the war, and the mechanical transport troops (*Kraftfahrtruppen*) are now under the Director of Mechanical Transport (*Chef des Kraftfahrwesens*).

The mechanical transport service provides the personnel for :—

- (a.) Motor cars and motor bicycles.
- (b.) Mechanical transport columns.
- (c.) Motor ambulance convoys.

The uniform of the mechanical transport troops is similar to that of the railway troops except that the letter “K” is worn on the shoulder straps instead of “E.” Car drivers and motor cyclists wear a bronze collar-badge representing a car or motor cycle.

The shortage of rubber and petrol has considerably restricted the employment of mechanical transport by the Germans during the war. As a rule, it is employed only where the railway service is either insufficient or overstrained.

At the Lines of Communication Main Dépôt of each Army in the field there is a mechanical transport park (*Kraftwagenpark*), with a varying number of Lines of Communication mechanical transport columns (*Etappen-Kraftwagen-Kolonnen*). Divisional mechanical transport columns are allotted to Divisions.

D.—Survey Units.

1. **Survey Department.**—In peace, the Prussian Survey (*Landesaufnahme*) is placed directly under the control of the Great General Staff. The survey is divided into three sections—trigonometrical, topographical and cartographical.

The subordinate personnel of the survey is mainly civilian. The officers and non-commissioned officers employed on survey work are, with few exceptions, drawn from the artillery.

2. **Survey Detachments.**—In war, a Survey Detachment (*Vermessungs-Abteilung*) is attached to each Army in the field. Each survey detachment has a printing section (*Felddruckerei*) attached, and is responsible for trigonometrical and topographical work, the preparation of artillery maps and boards, and the supply and issue of maps.

3. **Survey Sections.**—The location of hostile artillery is largely carried out by a chain of Survey Sections (*Artillerie-Messtrupps*), one of which is normally established in each Divisional sector of the front. Each survey section consists of the headquarters (*Mess-Zentrale* or *Haupt-Messtelle*) and about four survey posts (*Messtellen*). These posts are occupied with the intersection of gun flashes and of all important targets, and with observation of fire and registration of their own guns.

When first organized in 1915, these units were known as *Messplan-Abteilungen*. The term “*Artillerie-Messtrupp*” does not imply that these units form part of the artillery organization; in the German Army practically all survey personnel is drawn from the artillery.

4. **Sound Ranging Sections.**—A Sound Ranging Section (*Schall-Messtrupp*) is organized similarly to a Survey Section and works in conjunction with it. It normally consists of 2 officers and 25 other ranks, and is allotted to a sector of the front

The information obtained by these sections is communicated direct to the troops and then sent for accurate compilation to the Army survey detachments, which are responsible for compiling and publishing the necessary maps.

5. **Maps.**—In peace, the normal scales used were 1/100,000 for ordinary manœuvres, and 1/25,000 for detailed operations.

The small scale maps used by the Germans in the field are mainly 1/200,000 and 1/300,000 scales. An edition of the 1/200,000 is published for aviators, without contours, and with information as to camps, billets, &c., printed in red.

Of medium scales, there is a 1/60,000 reduction of the Belgian 1/40,000, and a direct reproduction of the French 1/80,000. Neither of these gives any information that is not on the originals, except that town and village populations are shown on the 1/80,000.

French Army *plans directeurs* have been copied, and sometimes combined with enlargements from smaller scale maps.

On the Western Front the Germans use the 1/80,000 for general purposes and the 1/25,000 for artillery work. Trench maps on scales of 1/10,000 and 1/5,000 have been captured, but there is no evidence to show which of these is the regular issue.

Artillery maps are squared with a kilometre grid, the squares being usually identified horizontally by letters and vertically by numbers.

6. **Meteorological Stations**—There is a meteorological station (*Feldwetter-Station*) at the Headquarters of each Army in the field; each of these has a number of auxiliary posts which send in observations for the daily weather forecast.

The meteorological stations work in conjunction with the Divisional anti-gas officers.

CHAPTER X.

AIR SERVICE.

1. General Organization.—In peace the German aircraft troops formed part of the Communication Troops, but an Army Order of the 25th November, 1916, definitely established the Air Forces (*Luftstreitkräfte*) as a separate branch, taking precedence between the Pioneers and the Communication Troops. At the same time the Air Forces, including all aeroplane, balloon and anti-aircraft units, were placed under the orders of a General Officer Commanding the Air Forces (*Kommandierender General der Luftstreitkräfte*), and the post of Chief of the Field Aviation Service (*Chef des Feldflugesens*) was abolished.

The General Officer Commanding the Air Forces is assisted by a Chief Staff Officer (*Chef des Generalstabes der Luftstreitkräfte*).

2. Flying Depôts in Germany. In Germany there are 12 Flying Depôts (*Flieger-Ersatz-Abteilungen*) where pilots, observers and mechanics are trained. These depôts are situated as follows:—

1. Jhaunisthal.
2. Schneidemühl.
3. Gotha.
4. Posen.
5. Hannover.
6. Grossenhain (Saxony).
7. Köln-Longerich.
8. Graudenz.
9. Darnstadt.
10. Büblingen (Württemberg).
11. Breslau.
- Bav. Schleissheim (near Munich).

There are also a number of subsidiary schools for observers and pilots, *e.g.*, the School for Artillery Aeroplane Observers at Gross Auz, near Mitau.

3. Organization in the Field.—At the Headquarters of each Army in the field there is a Staff Officer for the Aircraft Troops (*Stabsoffizier der Luftstreitkräfte*).*

Aeroplane and observation balloon units are allotted to Armies in accordance with the requirements of the situation.

Each Army in the field is provided with an Army Aircraft Park (*Armee Flug-Park*), which acts as a repairing depôt and park for machines and spare parts. These parks are also used as schools of instruction for pilots and observers.

* Som times abbreviated to *Stoluft*.

Besides the Army Aircraft Parks, there is a large experimental and testing park (*Versuchs- und Übungs-Park*) in both the Western and the Eastern Theatres. The experimental park on the Western Front is at Quessy-Tergnier* (near La Fère), and that on the Eastern Front is at Warsaw.

4. **Aircraft units.**—The standard aviation unit is the Flight of 6 machines (with 1 spare machine). The establishment of a flight is 7 officers and 140—150 other ranks. Pursuit flights and naval land flights comprise 12 machines (and 1 or 2 spare).

The main feature in the organization of the German aviation service is the way in which units are specialized for the different forms of aerial activity.

Flights are designated according to the tasks which they perform, as follows:—

(a.) **Battle Flights** (*Kampfstaffel*).—Of these units 42 have been identified. When first organized, at the beginning of 1916, battle flights were grouped in 6 battleplane squadrons under the Supreme Army Command (*Kampfflugzeug-Geschwader, O.H.L.*), each squadron consisting of six flights. During the summer of 1916 the squadron organization appears to have been broken up, and the battle flights were transferred independently from one Army to another as required. Their work generally appears to be purely defensive, but they are occasionally employed on bombing raids.

In some cases, when used purely for protective purposes, they are known as *Schutz-Staffel*.

In the case of fighting machines, both pilot and observer are usually officers.

(b.) **Pursuit Flights** (*Jagdstaffel*).—Of these units 20 have been identified. They first appeared during the Somme battle, and appear to be allotted to Armies for the purpose of driving away hostile machines.

The machines are always single-seater scouts, usually flown by officers.

(c.) **Reconnaissance Flights** (*Feldflieger-Abteilungen*).—Of these units 90 are known to exist. They are principally employed on reconnaissance, photography, and contact patrol work, and occasionally carry out bombing raids. One reconnaissance flight is normally allotted to each Corps sector, and two or three to each Army.

The pilots are usually non-commissioned officers, and the observers are officers from the infantry or cavalry.

(d.) **Artillery Flights** (*Artillerie-Flieger-Abteilungen*†).—These units are numbered from 201 upwards (Bavarian artillery flights from 101 upwards) to distinguish them from reconnaissance flights; over 80 are known to exist. Artillery flights are employed in the location of hostile batteries and other targets, and in observing the fire of their own guns; they also carry out photographic reconnaissance. One artillery flight is normally allotted to each Corps sector, but the distribution depends on the grouping of the artillery.

The pilots are usually non-commissioned officers, and the observers artillery officers.

(e.) **Naval Land Flights** (*Marine-Feldflieger-Abteilungen*).—Only three of these units are known to exist, two in Flanders and one in Courland. They carry out coastal reconnaissance, photography and bombing.

(f.) **Observation Balloon Detachments** (*Feldluftschiffer-Abteilungen*).—Of these units 50 are known to exist. Each detachment comprises two balloons and a gas column. The observers are usually artillery officers. Balloon detachments are attached to Armies as required.

* Was probably moved to Valenciennes in January, 1917.

† Sometimes abbreviated to *Aflu*.

(g.) **Airship Sections** (*Luftschiffer-Trupps*).—These units provide the personnel for dirigibles; 30 of them are known to exist. They are mostly stationed in Germany and do not form part of the field army. Each section comprises one or two military airships of the rigid or semi-rigid type, mainly *Zeppelin* or *Schütte-Lanz*.

5. Types of Aeroplane.—The main types of aeroplane in use at the beginning of 1917 were as follows:—

Roland.—Two-seater tractor biplane, passenger behind. Usually 160-h.p. Mercedes engine. One single very wide strut between the planes on each side.

Albatros, scout.—Single-seater tractor biplane, with totally enclosed fuselage. 160-h.p. Mercedes engine. One set of main plane struts. Practically no stagger to wings, and top plane without dihedral or anhedral (straight). Two guns firing through the propeller.

Albatros, two-seater.—Tractor biplane, with totally enclosed fuselage. 160-h.p. Mercedes or Argus engine. Two guns, one firing through the propeller, one on a turret mounting for the passenger behind.

Halberstädter.—Single-seater tractor biplane. Fuselage of a Morane type. 120-h.p. 6-cylinder Argus engine (they probably use 160-h.p. Mercedes as well). One gun firing through the propeller.

L.V.G.—Two-seater tractor biplane—passenger behind. Engine, 160 h.p. Benz. One gun on circular mounting for passenger.

Fokker monoplane.—Rarely met with now on the Western Front, as they have mostly been transferred to the Eastern Theatre. Single-seater tractor monoplane. 100-h.p. Gnome (rotary) engine. One gun firing through the propeller.

Rumpler biplane.—Two-seater tractor biplane with totally enclosed fuselage. Planes swept back with no stagger. Two guns—one for the pilot firing through the propeller, one for the observer on a turret mounting. Engine, 160-h.p. Mercedes.

Aviatik.—Two-seater tractor biplane with 160-h.p. 6-cylinder Mercedes. Fuselage totally enclosed. One gun for passenger.

Two-seater machines are usually armed with two machine guns, either of the '08 (*Maxim*) or *Parabellum* type. The observer's machine gun is often mounted on an all-round turret mounting.

Single-seater fighting machines usually have a fixed synchronized '08 machine gun firing through the tractor screw, and often have two guns firing ahead.

6. Anti-aircraft artillery.—(a.) **General organization.**—Anti-aircraft artillery is under the control of the Commander of the Air Forces, but the personnel is drawn from the artillery.

German anti-aircraft units consist of—

Anti-aircraft batteries.

Anti-aircraft sections.

Mobile anti-aircraft guns.

There is an anti-aircraft school of instruction at Ostend.

(b.) **Anti-aircraft batteries.**—An anti-aircraft battery (*Flug-Abwehr-Kanonen-Batterie**) consists of four guns. Anti-aircraft batteries are either Army troops, or stationed

* The words *Flug-Abwehr-Kanonen* are usually contracted to *Flak*.

at fortresses, railway junctions, or munition factories. They are numbered in the following series :—

1—150
301—350
501—550
1—15 motor batteries.

They are usually armed with 9-cm. or 10-cm. guns.

(c.) **Anti-aircraft sections**—The most common type of anti-aircraft unit is the anti-aircraft section (*Flug-Abwehr-Kanonen-Zug**), consisting of two guns. One of these units is normally attached to every Division and forms part of the Divisional artillery. They are numbered in the following series :—

1—200
401—450

They are usually armed with the 7·7-cm. field gun; sometimes with French 75-mm. guns and Russian field guns.

Another series of anti-aircraft sections is employed exclusively in protecting fortresses and munition factories. These units are known as *Ortsfestungs-Flug-Abwehr-Kanonen-Züge* they are numbered from 1 to 150, with the letter "O" added to the number.

Some anti-aircraft sections are armed only with machine guns. These units are known as *Maschinen-Flug-Abwehr-Kanonen-Züge*; they are numbered from 1 to 150, with the letter "M" added to the number.

(d.) **Mobile anti-aircraft guns**.—Mobile anti-aircraft guns (*Kraftwagen-Geschütze*) are mounted on motor lorries, and are usually Army troops. They are numbered from 1 to 200, with the letter "K" added to the number.

* See footnote on previous page.

CHAPTER XI.

ADMINISTRATIVE SERVICES.

1. General Organization.—Each Army in the field has its own Lines of Communication Inspectorate (*Etappen-Inspektion*), which controls the Lines of Communication area (*Etappen-Gebiet*) in rear of that Army.

In each Army Corps District in Germany there is a home base (*Etappen-Anfangs-Ort*) whence supplies are forwarded to a collecting station (*Sammel-Station*) established as close as convenient to the theatre of war. Beyond the collecting station is a forwarding station (*Übertragungs-Stelle* or *Weiterleitungs-Stelle*), which forwards the supplies to the Lines of Communication main dépôt of each Army.

A Lines of Communication main dépôt (*Etappen-Haupt-Ort*) is established in the Lines of Communication area of each Army, usually at a central railway junction. This forms a main dépôt for the supplies, ammunition, clothing and medical stores of each Army. Supplies of all kinds are issued at railhead (*Ausgabestelle*), where the Divisional trains refill. One railhead normally supplies two Divisions. During stationary operations, the broad-gauge railhead is usually situated within 4 or 5 miles of the front line. Supplies are there transferred to light railways (usually 60-cm.) and are thus delivered direct to units in front line.

The accompanying diagram shows the Lines of Communication system for an Army in the field.

2. The Intendence.—The administrative work of collecting and distributing supplies* is performed by the Intendence (*Intendantur*). The Intendence consists of military officials of two classes (upper and lower), and the necessary clerical staff (*see* page 18).

The Intendence is controlled by the Army Administration Department of the Ministry of War (*see* page 32). Beyond this, the essence of the Intendence system is decentralization; each Army, Corps and Division in the field has an Army, Corps or Divisional Intendant on its Headquarter Staff, who acts as administrative staff officer to his formation.

There is also a Deputy Intendant (*Stellvertretender Intendant*) in each Army Corps District in Germany, who is responsible for collecting the necessary supplies, clothing, &c., at the home base. He then hands over the loaded trains to the Military Railway Directorate (*see* page 84) which is responsible for transportation as far as the Lines of Communication main dépôt of the Army concerned. Here the supplies are sorted and distributed to the various Corps and Divisional railheads by the Army Intendant.

The Army Intendant is the senior administrative official with an Army in the field, and is in charge of Section IV. (a) at Army Headquarters (*see* page 35). He has to ensure supplies reaching the troops, and is responsible that all necessary magazines and dépôts are established and filled. He is also responsible for money contributions, and for utilizing to the full the resources of the occupied territory.

* The other duties of the Intendence are detailed on page 35.

The Corps and Divisional Intendants perform similar functions in Corps and Divisions. They are responsible for the administration of all supply units in their respective formations, such as supply columns and field bakeries, and control the pay office (*Kassen-Verwaltung*) and clothing section.

3. Regimental arrangements.—At the headquarters of each infantry regiment there is a transport officer (*Bagage-Führer*), who is responsible for the regimental transport, and in each battalion there is a supply officer (*Verpflegungs-Offizier*) who is responsible for drawing and issuing rations. These officers carry out the arrangements made by the Divisional Intendant as regards supply and transport.

Each infantry battalion has a paymaster (*Zahlmeister*) who is responsible to the Divisional Intendant as regards the pay of the unit.

4. Corps and Divisional Train Echelons.—Each Corps has one, and each Division two Train Echelons (*Staffel*), which comprise all the ammunition and supply columns, and administrative services of the formation.

The Divisional ammunition columns are artillery units and have already been dealt with on page 76.

The other units of the Divisional Train Echelons are as follows:—

- 1 bearer company (*Sanitäts-Kompagnie*).
- 3 field ambulances (*Feld-Lazarette*).
- 1 motor ambulance convoy (*Sanitäts-Kraftwagen-Kolonne*).
- 3 horse-transport supply columns (*Fuhrpark-Kolonnen*).*
- 1 remount dépôt (*Pferde-Depot*).
- 1 field bakery (*Feldbäckerei-Kolonne*).

These Divisional units are grouped in two échelons according to the order in which the columns are required on the march or during a battle. Each échelon has a separate staff (*Staffelstab*).

The Corps Train Echelon also comprises supply parks (*Proviant-Kolonnen*).

5. The Train.—All the personnel of the above units, except the trained medical, veterinary and mechanical transport personnel, is found by the Train.

The Train corresponds to our Army Service Corps only in so far as it provides the personnel, horses and vehicles of transport and supply units.† In peace, each Army Corps District had a *Train-Abteilung* organized in four squadrons, which formed the nucleus of the Corps or Divisional Train Echelons described above.

In addition to Corps and Divisional Train Echelons, the Train forms a number of supply and transport units on the lines of communication, namely:—

- Dépôt supply columns (*Magazin-Fuhrpark-Kolonnen*).
- Lines of Communication supply columns (*Etappen-Fuhrpark-Kolonnen*).
- Lines of Communication auxiliary bakeries (*Etappen-Hilfsbäckerei-Kolonnen*).
- Lines of Communication medical dépôts (*Etappen-Sanitäts-Depots*).
- Lines of Communication remount dépôts (*Etappen-Pferde-Depots*).

* These correspond to the companies of a British Divisional Train.

† The Train also provides personnel, horses and vehicles for regimental transport, bridging trains, &c.

6. **Rations.**—(a.) **Rations carried.**—The supplies carried with the troops consist of the field service ration (*Kriegsportion*) and the iron ration (*Eiserner Bestand*). The numbers carried and their composition according to the peace establishment are shown in the following tables:—

	On the man or horse.	In regimental supply wagons.		In travelling kitchens.	In supply columns and parks.
		Iron ration.	Field service ration.	Iron ration.	
Cavalry—					
Rations	1	1	2*	..	Five days' rations and three days' forage for Corps and half cavalry division.
Forage	‡	3‡	1‡†	..	
Infantry—					
Rations	2	..	2*	1	
Forage	1	3§	2	..	
Horse Artillery—					
Rations .. ..	..	3	2*	..
Forage	1‡	1‡	3||	..	
Field Artillery—					
Rations .. ..	..	3	2*	..
Forage	2	2	3¶	..	
Foot Artillery—					
Rations .. ..	..	3	2*	..
Forage	2	2	..	..
Pioneers—					
Rations .. ..	..	3	..	..
Forage	1	3	2*	..	

(b.) **Composition of rations prior to the war.**—At the beginning of the war the composition of the iron ration and field service ration was as follows:—

Iron ration.—

8.8 oz. biscuit	.. ..	250 grammes.
7.0 oz. preserved meat**	.. ..	200 „
5.3 oz. preserved vegetables	.. ..	150 „
.9 oz. coffee	.. ..	25 „
.9 oz. salt ..	.. ..	25 „
3.5 oz. packing	.. ..	100 „
<u>26.4</u>		<u>750 „</u>

* Cut down to one day's rations after the first day's march. Three days' extra groceries are also carried.

† For draught horses.

‡ Two days' for officers' horses only.

§ For riding horses on the horse and for draught horses in the wagon.

|| For the wagon horses only.

¶ For the officers' horses only.

** Or 6 oz. bacon.

Iron forage ration.—

Normal	..	..	..	..	..	13½ lbs. (6 kg.) oats.
Heavy draught horses	..	..	..	..	..	26½ lbs. (19 kg.) oats.

Field service ration.—

<i>Bread</i>	{ 26½ oz. bread or 750 grammes.				
	{ 14 oz. egg biscuit or 400 "				
	{ 17½ oz. field biscuit 500 "				
<i>Meat</i>	{ 13 oz. fresh or frozen meat or 375 "				
	{ 7 oz. preserved meat 200 "				
<i>Vegetable</i>	{ 4½ to 9 oz. vegetables or 125-250 "				
	{ 53 oz. potatoes or 1,500 "				
	{ 2 oz. dried vegetables or 60 "				
	{ a mixed ration of potatoes and dried vegetables 600 "				
<i>Grocery</i>	{ 9/10 oz. coffee or 25 "				
	{ 1/10 oz. tea 3 "				
	{ 7/10 oz. sugar 20 "				
	{ 9/10 oz. salt 25 "				

Forage ration.	Hay.	Oats.	Straw.
Normal	5½ lbs. (2·5 kg.)	13½ lbs. (6 kg.)	3½ lbs. (1·5 kg.)
Heavy draught horses	16½ lbs. (7·5 kg.)	26½ lbs. (12 kg.)	6½ lbs. (3 kg.)

(c) **Present composition of rations.**—*Meat ration.*—The daily fresh meat ration has undergone a considerable reduction during the past year, namely, from 350 g. (12½ oz.) in December, 1915, to 288 g. (10¼ oz.) at the end of June, 1916. Further, one meatless day per week was introduced in June, 1916. According to a statement laid before the Reichstag in October, 1916, the fresh meat ration at that time had been still further reduced, viz., to 250 g. (8¾ oz.).

The preserved meat ration was reduced during the same period from 200 g. (7 oz.) to 150 g. (5¼ oz.).

The above amounts are issued to the fighting troops, the fresh meat ration of staffs, columns and trains being only 200 g. (7 oz.) at the end of June, 1916.

Bread ration.—The normal daily ration for fighting and other troops is still 750 g. (1 lb. 10½ oz.), though this may be increased when the troops are undergoing unusual exertions. This is normal to peace conditions.

Vegetable and grocery rations.—In October, 1916, the daily vegetable ration consisted of 1,500 g. (3½ lb.) of potatoes or 250 g. (8¾ oz.) of beans, peas, &c.

Groceries at this date included—

Coffee	..	..	..	..	25 g. (.88 oz.)
or					
Tea..	..	..	..	..	3 g. (.1 oz.)
Sugar	..	..	..	..	17 g. (.6 oz.)
					(formerly 20 g.)
Butter	..	..	..	..	65 g. (2·3 oz.)

Drink ration.—The troops are provided with mineral water by the Intendence. Commanders may order a daily issue of—

- 17 pint: brandy, rum or arrack,
- 44 pint: wine,
- 88 pint: beer,

when the medical officers consider such an issue desirable.

Tobacco ration.—The daily ration consists of—

- Two cigars and two cigarettes, or
- 1 oz. of pipe tobacco, or
- 0·9 oz. of plug tobacco, or
- 0·2 oz. of snuff.

7. Arrangements for feeding troops during a battle.—Much stress is laid on the necessity for the troops taking several days' rations up with them into the line. The amounts considered necessary vary, but the general opinion is that 5 days' rations are the minimum; these need not necessarily be "iron rations."

In order to provide the troops with warm food, the Germans issued solidified alcohol with which food could be warmed up, or else took the food up in "food carriers"* and coffee cans. The latter method is, however, rarely applicable beyond the support trenches.

In addition to the rations carried by the troops, large ration depots, each containing several thousand rations, were formed close behind the positions; carrying parties brought these rations up into the trenches whenever pauses in the artillery fire permitted.

8. Water supply.—Generally speaking, most of the water in Northern France and Belgium is not fit for drinking purposes unless sterilized by boiling or other methods.

Soon after trench warfare became an established fact, the Germans organized local systems of water supply for the men in the trenches. As much use as possible was made of existing systems, pipe lines being laid from existing waterworks, or branching off from existing mains. In other cases pipe lines were laid from wells, and pumps were installed; intermediate reservoirs were built, or the vats of breweries and sugar factories were employed as reservoirs. In some places new wells were sunk. The pipe lines were led into villages close behind the front or even into the support trenches.

These methods of supply sufficed until the battle of the Somme, when the pipe lines were soon cut by the heavy bombardment, and the water had to be carted or carried up to the trenches.

To meet these new conditions, the Germans established or took over existing mineral water factories behind the front, and stored large quantities of bottled mineral water in and close behind the line.

The men took two filled water-bottles with them into the trenches, or, in some cases, were issued with special large tin water-bottles.

* Some of these "food carriers" are constructed on the principle of the "Thermos flask," and keep the food warm for several hours.

CHAPTER XII.

MEDICAL AND VETERINARY SERVICES.

1. **General organization of the Medical Service.**—The Army Medical Service consists of the corps of medical officers (*Sanitäts-Offizier-Korps*); the medical rank and file consists of the *Sanitätsmannschaft*, forming the medical units in the field, and the *Militär-krankenwärter* or hospital orderlies. In addition to the above there is the regular establishment of regimental stretcher bearers (*Krankenträger*).

The medical service of the Field Army is under a Director-General (*Chef des Feld-sanitätswesens*). He is attached to General Headquarters and controls the medical service in the theatre of operations and on the Lines of Communication. With the headquarters of each Army in the field there is a Director of Medical Services (*Armee-Arzt*) with the rank of *Obergeneralarzt*. Each Corps has a *Generalarzt* as Deputy Director of Medical Services (*Korpsarzt*), with a consulting civil surgeon (holding military medical rank) attached to his staff. Each Division has a *Divisionsarzt* as Assistant Director of Medical Services. For the grades of medical officers, see page 20.

2. **Medical organization in the field.**—The German medical organization for battle comprises the following échelons from the firing line to the back areas:—Regimental Medical Service; Bearer Companies (Field Ambulances); Field Hospitals; Motor Ambulance Convoy or Column; War Hospitals; Ambulance Trains and Temporary Ambulance Trains; Advanced Dépôts of Medical Stores.

3. **Regimental medical service.**—Normally there are with each battalion two medical officers, four medical non-commissioned officers (one with each company), and 16 stretcher bearers, with a senior medical officer for the regiment. At the end of May, 1916, a fifth medical non-commissioned officer was added to each battalion. The stretcher bearers are borne on the establishments as non-combatants and wear the Red Cross brassard.

In the trenches each company formed a medical dug-out or aid post just behind the fire trench, but owing to the large number of casualties amongst the medical officers, it was considered inadvisable to let the battalion medical officers go forward to the fire trench.

A large regimental aid post or dressing station (*Truppenverbandplatz*) is established further back, usually in or near the second support trench, and accommodated in well constructed dug-outs or in cellars. The dug-outs are constructed to hold 20 wounded. A telephone is provided, and supplies of lighting materials, extra rations, dressings and medical comforts to cover periods of five days or more are maintained in the aid post.

Similar aid posts are formed for groups of three or four batteries of artillery, if the latter are not too far apart.

The personnel on duty in a regimental aid post normally consists of three battalion medical officers, and a detachment of eight stretcher bearers with two stretchers from the bearer company. Wounded are brought to the regimental aid post by the battalion stretcher bearers, and are kept there as short a time as possible, being evacuated by the bearer company.

In back areas the regimental medical service opens a local medical inspection room and ward for detained cases (*Ortskrankenstube*), where patients may be kept up to five days.

4. **The bearer company** (*Sanitätskompanie*) or field ambulance consists of elements equivalent to the bearer division and the tent division of our field ambulance. There are 208 stretcher bearers in two sections with non-commissioned officers and other ranks under officers who are not medical officers, and with a medical officer in medical charge of the sections; and there is also a main dressing station detachment of eight medical officers including the senior medical officer in command.

There are three of these companies in each Corps (one with each Division). During the battle of the Somme this was not found sufficient, and there was a demand for two bearer companies for a Division in the fighting line. The bearers of the one company became exhausted, and it was necessary to establish a relief company to cope with the work of collecting and bringing back wounded.

The posts established in action by the bearer company were :—

- (a.) A wagon rendezvous (*Wagenhalteplatz*).
- (b.) A main dressing station (*Hauptverbandplatz*).
- (c.) A collecting station for slightly wounded (*Leichtverwundeten-Sammelplatz*).

(a.) *The wagon rendezvous* is placed in advance of the main dressing station and about 4,000 yards behind the regimental aid post. Dug-outs are constructed at this post, and arrangements are made for giving hot food and drinks to wounded coming back. A dump for issue of medical and surgical material to the regimental medical service has also to be maintained by the bearer company at or near the wagon rendezvous. The post is provided with a telephone. The personnel consists of a small detachment of the stretcher bearers under a non-commissioned officer, and a medical officer is placed on duty there from time to time by order of the Divisional Assistant Director of Medical Services. One or more of the ambulance wagons of the company are kept constantly at the wagon rendezvous, and go forward at night to meet the bearers bringing back wounded. The wagon rendezvous performs much the same function as our advanced dressing station.

(b.) *The main dressing station* is established in a shell-proof shelter in some village 6 or 7 miles from the front line. The personnel may be reinforced from the regimental medical services or from field hospitals; but it is not to be used for reinforcing or replacing medical officers of either of these échelons. All wounded coming back from the regimental medical service must pass through this post. Two or more motor ambulance cars are allotted to it, and one motor omnibus.

The walking cases are sent back to the main dressing station, after being collected at the wagon rendezvous, in small groups and in march formation.

Every wounded man must have two diagnosis tallies (field medical cards) attached. These tallies have two red perforated margins. If a man is able to walk (*marschfähig*), both margins are torn off: if classed as fit for transport (*transportfähig*), one margin is torn off; if unfit for transport (*nicht transportfähig*), the card is left intact. A man coming back to the main dressing station or wagon rendezvous without a field medical card, or without

authority, is sent back to his unit, unless he is found to be suffering from sickness or wound, in which case the card is attached at the main dressing station and the unit informed. This procedure is adopted to prevent men straggling back from the front who have nothing the matter with them.

Amongst the special equipment attached to one of the main dressing stations in a Corps area is a water sterilizing wagon.

(c.) *The collecting station for slightly wounded* is established further back, at or near an entraining station. The walking cases are sent on from the main dressing station, either in march formation or in the motor omnibus or other vehicles.

5. Field hospitals (*Feldlazarette*), normally 12 per Corps, are under the control of the Corps D.D.M.S. They are used in the same way as we use casualty clearing stations for the retention of cases unfit for transport and for special cases. The number of medical officers in each is six. Normally equipped for 200 beds they are expected to expand to any extent. They are opened in various villages in the back area.

Field hospitals are organized during a battle to deal with special cases. During the Somme battle, advanced operating centres were arranged near the main dressing stations. There were also special field hospitals allotted for severely wounded, special surgical cases, Röntgen ray examination, dental cases, gassed cases and infectious cases.

6. Motor ambulance convoys (*Sanitäts-Kraftwagen-Kolonnen*).—The composition of these has not been definitely ascertained. There was no war establishment laid down for them before the war. They appear to be a collection of motor ambulance cars and omnibuses, parked under an officer at some village or locality in telephonic communication with medical units, and used for the conveyance of sick and wounded from the main dressing station to the entraining station or to field hospitals on demand.

One of these motor ambulance convoys is allotted to each Army Group or Corps.

7. War hospitals (*Kriegslazarette*) are used in much the same way as we use stationary hospitals in advanced areas. The number is not fixed and depends on localities available for opening them. Their equipment and personnel are obtained, as required, to a great extent from local resources or depôts of medical stores; but there is a nucleus of the personnel in the form of a definite unit called the War Hospital Detachment (*Kriegslazarettabteilung*), mobilized in the proportion of one for each Corps. Each detachment has 19 medical officers, a dentist, three pharmacists, and subordinate ranks.

They are intended for the more or less continuous treatment of special classes of wounds and injuries, which are not sent back to Germany. Hospitals for infectious diseases (*Seuchen-Lazarette*) are also organized.

8. The ambulance convoy detachment (*Krankentransportabteilung*) is a definite unit, divisible into three sections and allotted in the proportion of one to each Army. Its personnel consists of seven medical officers with subordinate ranks, and its function is to open reception shelters, dressing stations and refreshment rooms at stations where sick and wounded entrain, and take care of them while awaiting evacuation by railway. It is also a distributing centre for classifying patients for evacuation to various field hospitals or war hospitals, opened for the reception of special cases in the villages in Army and advanced Lines of Communication areas. It makes arrangements for the comfort of sick and wounded during the journey back, and, with the special equipment held for the purpose in advanced depôts of medical stores, fits out empty returning trains as temporary ambulance trains.

The unit is used for the same purpose as we use the evacuation section of our casualty clearing stations.

9. Ambulance trains (*Lazarettzüge*).—In connection with the operations of the 1st Army during the Somme battle, ambulance trains ran to within 15 miles of the front line. Both slightly and severely wounded were also sent back on narrow-gauge railways.

10. Advanced depôts of medical stores (*Etappen-Sanitäts-Depots*).—These are on the Army Lines of Communication. For the 1st Army, during the Somme operations, depôts were opened at Cambrai and Valenciennes, with advanced issuing stores nearer the front.* The Divisional bearer company is responsible for bringing up stores to a dump for issue to regimental medical services.

11. The Veterinary Service.—The Army Veterinary Service consists of the corps of veterinary officers (*Veterinär-Offizier-Korps*) and sub-veterinary surgeons (*Unterveterinäre*). Like medical officers, veterinary officers are assimilated in grade to combatant officers, but have no combatant rank.

The *Korpsveterinär* is the veterinary adviser of the Corps Commander, and is responsible for all veterinary services throughout the Corps.

Each Division has a remount depôt (*Pferde-Depot*), which is administered by the (*Divisionsveterinär*), and corresponds to our mobile veterinary section.

With each cavalry or field artillery regiment there is a *Regimentsveterinär*, and the lower ranks of veterinary officers (*Oberveterinär* and *Veterinär*) are attached to cavalry squadrons and field artillery *Abteilungen*. According to the peace establishment, three veterinary officers are attached to each cavalry and field artillery regiment.

Besides the Divisional *Pferde-Depot*, the only veterinary units are the veterinary hospitals (*Pferde-Lazarette*) controlled by Armies, and the Lines of Communication remount depôts (*Etappen-Pferde-Depots*).

* At Epéhy and Futy-en-Artois.

CHAPTER XIII.

LANDSTURM UNITS.

1. **General organization.**—All men between the ages of 17 and 45 who have not been found fit for war service, and who have not been specially exempted from military service, are incorporated in Landsturm units.

Landsturm units are sub-divided into—

- (a.) Armed Landsturm (*mit Waffen*).
- (b.) Unarmed Landsturm (*ohne Waffen*).

The Armed Landsturm consists of the men passed as “fit for garrison duty” (*Garnison-dienstfähige*); the Unarmed Landsturm consists of those passed as “fit for labour employment” (*Arbeitsverwendungsfähige*).

Every man in the Landsturm, Armed or Unarmed, is liable at any time to be re-examined; if considered “fit for war service” (*Kriegsverwendungsfähig*), he is sent to the depôt of a field unit, and eventually takes his place in the ranks as a fighting man, though still retaining the designation *Landsturmmann*.

2. **Organization of the Armed Landsturm.**—The Armed Landsturm is organized in battalions, squadrons, batteries and pioneer companies.

The total number of units of Armed Landsturm identified up to the end of 1916 was as follows:—

Infantry battalions	..	..	..	..	..	..	840
Cavalry squadrons	..	..	..	..	..	..	85
Field artillery batteries	..	..	..	..	..	..	35
Foot artillery batteries	..	..	..	..	..	..	65
Pioneer companies (including pioneer park companies)	..	..	..	..	..	..	130

Of the 840 Landsturm infantry battalions, about 120 have been grouped to form 40 Landsturm infantry regiments, which are mostly employed on the Russian front. There is no higher formation of Landsturm than the infantry regiment.

The greater part of the Armed Landsturm is organized in independent battalions; on an average, 35 Landsturm infantry battalions have been raised in each Army Corps District. These battalions are designated by a serial number in each Army Corps District; thus, “Landsturm Infantry Battalion VIII/10” means the 10th Landsturm Infantry Battalion raised in the VIII. Army Corps District. Landsturm battalions have also a subsidiary title dependent on their town of origin; thus: “Landsturm Infantry Battalion VIII/10” is also known as the “2nd Coblenz Landsturm Infantry Battalion.”

3. **Employment of the Armed Landsturm.**—A certain number of Landsturm battalions, principally those which have been incorporated in regiments, have been

employed in front line, but this procedure is still comparatively rare. Landsturm units only appear in front line on the Eastern Front or in quiet sectors of the Western Front such as Lorraine or the Vosges. The employment of Landsturm units in front line will, however, probably increase. There is a tendency to employ them in front line in quiet sectors, in order to liberate Active formations for employment elsewhere.

In general, the battalions of Armed Landsturm are employed as—

- (a.) Garrisons of the coast defences.
- (b.) Guards for neutral frontiers.
- (c.) Garrisons of inland fortresses.
- (d.) Guards for the Lines of Communication
- (e.) Guards for prisoners of war.
- (f.) Garrisons of the occupied territories.
- (g.) Landsturm depôt and training battalions.

(a.) **Garrisons of the coast defences.**—The coast defences, which used to be almost entirely in the hands of the Admiralty, were in 1916 placed under an independent military commander.

In addition to naval units, the troops allotted to the coast defences consist of 50 battalions of Armed Landsturm belonging to the Army Corps Districts adjoining the coast (X., IX., II., XVII. and I.). These battalions are distributed as follows :—

North Sea (20 battalions).

- 8 battalions (X.) defending the Frisian Islands, mainly at Borkum and Norderney.
- 4 battalions (IX.) defending the estuary of the Weser.
- 8 battalions (IX.) defending the west coast of Schleswig, mainly at Sylt.

Baltic (30 battalions).

- 12 battalions (IX.) defending the east coast of Schleswig, mainly at Alsen, Kiel and Lübeck.
- 10 battalions (II.) defending Stettin and the Island of Rügen.
- 4 battalions (XVII.) at Danzig.
- 4 battalions (I.) at Königsberg and Labiau.

(b.) **Guards for neutral frontiers.**—The troops allotted to guard the German land frontiers consist of about 40 Landsturm battalions. The majority of these are concentrated on the Dutch and Swiss frontiers; only a few are on the Danish frontier.

(c.) **Garrisons of inland fortresses.**—The fortress garrisons consist of 20 garrison battalions drawn from the Armed Landsturm.

They exist at Posen, Breslau, Strassburg, Graudenz, Lötzen, Marienburg, Soldau, Ingolstadt and Regensburg.

(d.) **Guards for the Lines of Communication.**—About 12 Landsturm battalions are employed on the Lines of Communication Inspectorate (*Etappen-Inspektion*) allotted to each Army.

In all, about 200 Landsturm infantry battalions are employed in this way.

(e.) **Guards for prisoners of war.**—There are about 150 prisoners of war battalions (*Kriegsgefangenen-Arbeiter-Bataillone*), each consisting of about 2,000 prisoners of war guarded by 150 to 200 men of the Armed Landsturm.

(f.) **Garrisons of the occupied territories.**—The Military Governments (*General-Gouvernements*) in Poland, Belgium, Serbia and Rumania are safeguarded by permanent garrisons of Armed Landsturm battalions, as well as by the field units resting in the different areas.

In Belgium there are 90 Landsturm battalions forming the permanent garrison, and in Poland 40 battalions.

The Belgian garrison is distributed in groups of 5 to 12 battalions at the main railway junctions, such as Liège, Antwerp, Brussels, Namur and Ghent. The remaining battalions are distributed singly or in pairs along the main railway lines and along the Dutch frontier, which is also guarded by a number of Landsturm squadrons.

In addition to the ordinary Landsturm infantry battalions, there are a few permanent garrison battalions stationed at certain places such as Bruges, Malines, Tournai and St. Quentin.

(g.) **Landsturm dépôt and training battalions.**—Among the series of Landsturm infantry battalions formed in each Army Corps District are a certain number of *Landsturm Infanterie-Ersatz-Bataillone*. These units serve as dépôt battalions: there is approximately one Landsturm dépôt (*Ersatz*) battalion for every four Landsturm infantry battalions.

To these dépôt battalions are sent all untrained Landsturm men and those rejected as unfit for service at the front. The men in these battalions are employed on light garrison duty in Germany, and are subjected to frequent medical examinations. Whenever they are considered fit for more active work, the men are drafted to Landsturm infantry battalions.

Of a similar nature are the training battalions (*Landsturm Infanterie-Ausbildungs-Bataillone*), of which there are one to three in each Army Corps District. These units, which assist in training men of the untrained Landsturm, are mainly composed of men of an inferior type to those incorporated in the dépôt battalions.

4. **The Unarmed Landsturm.**—The Unarmed Landsturm is composed of the remaining men of the Landsturm category who are considered as "only fit for labour employment" (*Arbeitsverwendungsfähige*). This class is employed on various forms of labour, such as trench-construction, cultivation, road making, forestry and harvesting.

The auxiliary units of this nature identified up to the end of 1916 were as follows:—

200 Labour Battalions (*Armierungs-Bataillone*).

100 Road Construction Companies (*Strassenbau-Kompagnien*).

50 Lines of Communication Auxiliary Companies (*Etappen-Hilfs-Kompagnien*).

30 Lines of Communication Collecting Companies (*Etappen-Sammel-Kompagnien*).

80 Agricultural Companies (*Wirtschafts-Kompagnien*).

20 Harvesting Companies (*Ernte-Kompagnien*).

A certain number of skilled workers are incorporated in technical battalions (*Facharbeiter-Bataillone*).

CHAPTER XIV.

UNIFORM.

(See Plates 2 to 11, at end.)

1. **General.**—Before the war, the German Army possessed two different uniforms, one for parade and one for field service.

The field service uniform (*feldgraue Uniform*), which was introduced in 1910, is now the only pattern met with in the field, the old dark-blue uniform (*dunkelblaue Uniform*) being obsolete.

In 1915, a new field service uniform was introduced, comprising a tunic for wear in time of peace, and a jacket (*Bluse*) for wear on field service. A detailed description of the new field service uniform is given in Appendix A (page 113).

This new uniform had not been taken into general use at the beginning of 1917, although it had been issued to a certain number of units, principally artillery and engineer.

The colour of the field service uniform is "field-grey" (*feldgrau*) for all arms with the exception of the following units which wear a greener colour known as "grey-green" (*graugrün*):—

- (1.) All Prussian and Saxon *Jäger* battalions, but not Bavarian *Jäger* battalions.
- (2.) The 108th *Schützen* Regiment and the Guard *Schützen* battalions.
- (3.) *Jäger zu Pferde* regiments.

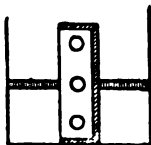
2. **The field service tunic.**—All arms and units, except certain cavalry regiments, wear the single-breasted tunic (*Waffenrock*) with coloured facings, and eight dull metal buttons embossed with a crown (with a lion for Bavarian troops). The skirts at the back of the tunic are slashed and have six similar buttons. The tunic has side pockets closed by buttons.

The front of the tunic as well as the skirt behind, is edged with scarlet piping (green for *Jäger* and *Schützen*).

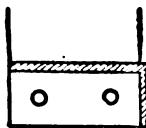
The tunic has a stand and fall collar closed by a hook and eye. The collar is edged with coloured piping as follows:—

- (1.) Scarlet for Infantry.
- (2.) Green for *Jäger*.
- (3.) Black for *Schützen*, Artillery, Pioneers, Air Service, Telegraph and Communication Troops.
- (4.) Blue for Train.

The cuffs are either of the Brandenburg or Swedish pattern. The Brandenburg cuff has three buttons placed vertically; the Swedish cuff has two buttons placed horizontally. The piping on the cuffs is of the same colour as that on the collar (*see above*).



Brandenburg.



Swedish.

Guard and Grenadier units are distinguished by patches (*Litzen*) of white or yellow braid on collar and cuffs. The Brandenburg and Swedish cuffs have three and two *Litzen* respectively, one for each button.

3. Shoulder straps of the field service tunic.—The tunic is provided with field-grey (or grey-green) shoulder straps, which bear either the number or the monogram of the regiment worked in red (see Plate 2). Foot Guards and Horse Guards regiments have plain shoulder straps. Reserve, Landwehr and Ersatz regiments wear the same number on their shoulder straps as the corresponding Active regiment, but not the monogram.

The shoulder strap is fastened with a metal button which bears the number of the man's company, &c.

The shoulder strap is edged with piping*, the colour of which varies for different units as follows :—

White piping.—

- 1st and 5th Foot Guards Regiments, and 1st and 5th Guard Grenadier Regiments.
- Infantry regiments of the I., II., IX., X. and XII. Army Corps Districts and the 109th, 110th and 116th Infantry Regiments.
- Field Artillery regiments of the I., II., IX., X. and XII. Army Corps Districts.
- All Foot Artillery units (except Saxon).
- All independent machine-gun units.

Scarlet piping.—

- 2nd Foot Guards Regiment and 2nd Guard Grenadier Regiment.
- Infantry regiments of the III., IV., XIII., XV. and XIX. Army Corps Districts, and the 111th, 115th, 168th, 169th, 171st, 172nd Infantry Regiments and 2nd Bn. 89th Grenadier Regiment.
- † 1st and 2nd Guard Field Artillery Regiments.
- Field Artillery regiments of the III., IV., XI., XIII., XIV., XV. and XIX. Army Corps Districts and the 25th and 61st Field Artillery Regiments.
- All Pioneer units.
- Saxon Foot Artillery units.

Yellow piping.—

- 3rd Foot Guards Regiment, 3rd Guard Grenadier Regiment, Guard Fusilier Regiment.
- Infantry regiments of the V., VI., XVI. and XVII. Army Corps Districts, and the 112th, 118th and 142nd Infantry Regiments.
- 3rd Guard Field Artillery Regiment.
- Field Artillery regiments of the V., VI., XVI. and XVII. Army Corps Districts.

Blue piping.—

- 4th Foot Guards Regiment and 4th Guard Grenadier Regiment.
- Infantry regiments of the VII., VIII., XVIII. and XX. Army Corps Districts, and the 40th, 113th, 145th and 170th Infantry Regiments.
- Field Artillery regiments of the VII., VIII., XVIII., and XX. Army Corps Districts.
- Train units.

* In the field, shoulder straps without piping are frequently met with.

† The 1st Guard Field Artillery Regiment has also a narrow white piping inside the scarlet edging.

Green piping—

Infantry regiments of the XXI. Army Corps District, and the 114th Infantry Regiment.

All *Jäger* battalions.

Guard *Schützen* battalions.

108th *Schützen* (Fusilier) Regiment.

Field Artillery regiments of the XXI. Army Corps District

Light grey piping—

Air Service, Telegraph and Communication Troops.

Prussian, Saxon and Württemberg field artillery units have a grenade, worked in red, above the number on the shoulder strap. In the case of field artillery units which wear a monogram instead of a number, the grenade is placed below the monogram.







Bavarian field artillery units do not wear a grenade on the shoulder strap.

Minenwerfer companies wear the letters "M.W." above the number of the company.

The following badges, worked in red above the shoulder strap number, are peculiar to Saxon units:—

<i>Jäger</i> and <i>Schützen</i>	..	..	..	..	..	Hunting horn.
Foot Artillery	..	..	..	..	..	Grenade.
Pioneers	..	..	..	..	..	Crossed pick and shovel.

The following special monograms or badges are worn on the shoulder strap by technical troops:—

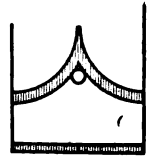
Aeroplane units	..	..	..	..	..	..
Airship and balloon units	..	..	..	..	..	..
Railway troops	..	..	..	..	..	..
Telegraph and telephone units	..	..	..	..	..	..
Mechanical transport troops	..	..	..	..	..	..
Experimental companies of pioneers and communication troops	..	..	..	..	..	..

4. **Cavalry Tunics.**—Cuirassier, Dragoon and *Jäger zu Pferde* regiments wear a tunic with a stand up collar (in place of the stand and fall collar worn by the infantry), Swedish pattern cuffs and coloured piping round the lower edge of the skirt. The colour of the piping on tunic and collar varies in different regiments. The collar and cuffs are also trimmed with braid (*Bortenbesatz*), the pattern of which varies for different regiments.

Ulanen and Bavarian *Chevaulegers* regiments wear a double-breasted lancer tunic (*Ulanka*), with two rows of seven buttons, a pointed cuff with one button and a stand up collar. The seams of the back and sleeves are also edged with coloured piping (see Plate 3).

The shoulder straps of the *Ulanka* are rounded off at the corners, except in the case of the Saxon *Ulanen* regiments, 17, 18 and 21, which have shoulder straps of the normal shape.

Hussar regiments wear the braided hussar tunic (*Attila*), with five bars of braid on the chest, and horn acorns with loops. The *Attila* has coloured shoulder cords in place of shoulder straps, and braided looping on the cuffs. Metal numerals or monograms are worn on the shoulder cords.



5. **Head-dress.**—The black leather polished helmet, with metal spike, is worn by infantry, pioneers, train, and dragoon and *Chevaulegers* regiments. Artillery units wear a similar helmet with a ball instead of a spike, except in the case of Bavarian artillery units, which have a spiked helmet.

Jäger and *Schützen* battalions wear a black leather shako (*Tschako*).

Ulanen regiments wear a lance cap (*Tschapka*), and hussar regiments wear a busby (*Pelzmütze*).

Cuirassier regiments have a polished metal helmet with a spike (an eagle for Guard Cuirassiers), and *Jäger zu Pferde* wear a black polished metal helmet with spike.

In front of the head-dress is worn a metal plate which varies in design for the different States (see Plate 4).

In the field all the above forms of head-dress are provided with covers of field-grey cloth.

The number of the unit is sometimes stencilled in green on the helmet cover.

In addition to the various forms of head-dress described above, all arms wear a soft forage cap (*Feldmütze*), which usually replaces the helmet in the trenches. The cap is field-grey (grey-green) with coloured band and welt, the colours of which vary for the different arms as follows:—

Arm of the service.	Cap band.	Welt.
Infantry	Scarlet	Scarlet.
<i>Jäger</i>	Green	Green.
<i>Schützen</i>	Black with green edging	Green.
Artillery, Engineers, Air Service and Communication Troops	Black with scarlet edging	Scarlet.
Train	Light blue	Light blue.
Cavalry	Various	Various.

In the field the coloured band is concealed by a strip of field-grey cloth.

The forage cap (see Plate 6) has two coloured metal cockades in front; the upper one (*Deutsche Kokarde*) bears the German colours (black, white, red) in concentric rings;

the lower one (*Landeskokarde*) bears the colours of the State. The principal State colours are as follows:—

Prussia	..	..	..	..	..	..	..	Black and white.
Bavaria	..	..	..	..	..	..	..	Blue and white.
Saxony	..	..	..	..	..	..	..	Green and white.
Württemberg	..	..	..	..	..	..	..	Red and black.
Baden	..	..	..	..	..	..	..	Red and yellow.

These cockades are also worn at the side of the helmet, forming the chin-strap attachment.

The *Dienstmütze*, or forage cap, provided with a black leather peak and chin-strap, is worn by all ranks in peace when off parade, but in the field it is usually worn only by officers and non-commissioned officers.

6. **Belt.**—All arms wear a leather belt (*Feldkoppel*). Mounted units wear a belt with a plain buckle in front; the infantry belt has a buckle plate embossed with a crown and the national motto:—

Prussia and Baden	..	..	..	..	..	..	..	"<i>Gott mit uns.</i> "
Bavaria	..	..	..	..	..	..	..	"<i>In Treue fest.</i> "
Saxony	..	..	..	..	..	..	..	"<i>Providentiæ memor.</i> "
Württemberg	..	..	..	..	..	..	..	"<i>Furchtlos und treu.</i> "

Attached to the belt is the bayonet frog or sword sling. The bayonet knot or sword knot varies in colour according to the company, &c.

7. **Badges of Rank.**—Officers' uniform is of similar pattern to that of the other ranks, but is of finer material. All black facings are of velvet, and Guard patches, &c., are of silver or gold lace.

Badges of rank are worn on the shoulder strap by officers and on the collar and cuffs by other ranks. Officers' shoulder straps bear the number of their regiment in metal numerals.

Subaltern officers (a) wear narrow flat shoulder straps of silver lace.

Field officers (b) wear slightly larger shoulder straps of twisted silver cord.

General officers (c) wear shoulder straps of twisted gold and silver cord mixed, and larger than those of field officers. The tunic worn by general officers has breast pockets, and scarlet collar patches with gold embroidery.

The badges of rank for officers are—

(a)	2nd Lieutenant (<i>Leutnant</i>)	..	..	..	..	..	No star.
	Lieutenant (<i>Oberleutnant</i>)	..	..	..	..	..	One star.
	Captain (<i>Hauptmann</i> or <i>Rittmeister</i>)	..	..	..	..	..	Two stars.
(b)	Major (<i>Major</i>)	..	..	..	..	..	No star.
	Lieut.-Colonel (<i>Oberstleutnant</i>)	..	..	..	..	..	One star.
	Colonel (<i>Oberst</i>)	..	..	..	..	..	Two stars.
(c)	Major-General (<i>Generalmajor</i>)	..	..	..	..	..	No star.
	Lieut.-General (<i>Generalleutnant</i>)	..	..	..	..	..	One star.
	General (<i>General</i>)	..	..	..	..	..	Two stars.
	<i>General-Oberst</i>	..	..	..	..	..	Three stars.
	Field-Marshal (<i>General-Feldmarschall</i>)	..	..	..	..	..	Crossed bâtons.

Non-commissioned officers wear the same uniform as the men, but are distinguished by the following badges of rank :—

Lance-corporal or bombardier (<i>Gefreiter</i>)	A button on each side of the collar.
Corporal (<i>Unteroffizier</i>) .. ..	.. Gold or silver lace on collar and cuffs.
<i>Feldwebel</i> and <i>Vizefeldwebel</i> .. ..	.. } Gold or silver lace on collar and
	cuffs and a button on each side
<i>Wachtmeister</i> and <i>Vizewachtmeister</i>	} of the collar.

Feldwebel and *Wachtmeister* wear the officers' sword and sword knot and have an extra bar of lace on the sleeve above the cuff.

Serjeant-major-lieutenants (*Feldwebelleutnants*) wear the badges of rank of a *Vizefeldwebel* or *Vizewachtmeister*, and in addition wear the shoulder straps of a 2nd Lieutenant. They carry the arms and equipment of an officer.

Acting officers (*Offiziersstellvertreter*) wear the badges of rank of a *Vizefeldwebel* or *Vizewachtmeister*, and in addition have an edging of gold or silver lace (similar to that on collar and cuffs) on the shoulder straps. They carry the arms and equipment of a non-commissioned officer.

8. Special badges and marks.—*General Staff Officers* wear carmine collar patches and a treble carmine stripe on the pantaloons.

Guard and Grenadier units wear white or yellow patches (*Litzen*) on collar and cuffs.

Musketry badges are worn by individual marksmen, and consist of a plaited cord (*Schützenschnur*) from the right shoulder to the top button of the tunic.

Machine-gun marksman units are distinguished by an oval badge, representing a machine gun, worn on the left sleeve (see Plate 7).

Electrical detachments (*Starkstromabteilungen*) are distinguished by a circular badge representing forked lightning on the left sleeve.

Medical personnel and stretcher bearers wear a lemon-yellow badge representing an Æsculapius' staff on the right sleeve and a Red Cross brassard on the left arm. Medical officers have dark blue collar patches edged with scarlet. Veterinary officers wear black collar patches with carmine edging.

Certain *Hanoverian, Brunswick and Nassau* units wear British battle honours; thus the 73rd Fusilier Regiment, the 79th Infantry Regiment and the 10th *Jäger* Battalion wear a light blue band on the right sleeve with the inscription "Gibraltar," and all the original Hanoverian regiments have "Waterloo" inscribed on the helmet plate. The 92nd Infantry Regiment and the 17th Hussar Regiment wear a metal Death's Head badge on the head-dress.

Bandsmen and trumpeters wear epaulettes (*Schwalbennester*), trimmed with stripes of white or yellow braid. These stripes are vertical for dismounted and oblique for mounted units.

9. Landwehr and Landsturm Uniform.—*Landwehr* units wear the same uniform as active and reserve units, and are only distinguished by having a white cross on the lower cockade of the cap and the letter "L" above the number on the helmet cover.

Landsturm units wear a field-grey uniform similar to the normal one, but the shoulder straps bear no numbers and are of different colours for the various arms as follows :—

Infantry	Blue.
Pioneers	Black.
Field Artillery	Scarlet.
Foot Artillery	Yellow.

Landsturm cavalry squadrons wear the uniform of their parent regiment, and are only distinguished by the Landwehr cross.

Landsturm units are distinguished by dull brass numerals worn on the collar. The Army Corps District is shown by a Roman numeral ("G" for Guard) and the number of the battalion, &c., by an Arabic one (*see* Plate 5).

Landsturm units in the field wear the helmet or shako; the helmet cover bears the number of the battalion (but not of the Army Corps District), surmounted by the Landwehr cross. Units of the Unarmed Landsturm wear an oil-cloth cap with a brass Landwehr cross in front.

10. Means of Identification.—German prisoners and dead may be identified by the following means:—

- (a.) Distinguishing marks on uniform and equipment.
- (b.) Identity disc.
- (c.) Pay book.
- (d.) Addressed correspondence and other documents.

(a.) **The distinguishing marks** denoting the various arms, grades and units have been described above. Besides these, regimental marks are frequently stencilled on the lining of the uniform, as well as the stamp of the Army Corps clothing depôt, *e.g.*, *B.A. IV.*, denoting the *Bekleidungs-Amt* of the IV. Army Corps District. Owing to the frequent transfers of men from one unit to another, and also to the fact that men on leaving hospital, or returning from furlough, may be issued with uniform from another clothing depôt, such means of identification are often deceptive.

The regimental markings on arms, accoutrements, gas masks, &c., are still less likely to afford true identifications.

(b.) **Identity disc.**—Every German officer and soldier carries a metal identity disc (*Erkennungsmarke*), which is intended to be worn round the neck. The identity disc is not an entirely reliable means of identification, as the transfer of a man from a depôt to a field unit or from one field unit to another is not always recorded.

Three patterns of identity discs are met with (*see* Plate 11). The old pattern (Fig. 1), which is oval in shape, and measures 2 inches by $1\frac{1}{2}$ inches, gives the man's regiment, company and individual number in the company. The lettering is apt to be confusing, the following abbreviations being used:—

<i>I.</i> or <i>J.</i>	for Infantry.
<i>R.</i>	for Regiment or Reserve.
<i>L.</i> or <i>Ldw.</i>	for Landwehr.
<i>E.</i> or <i>Ers.</i>	for Ersatz.
<i>C.</i> or <i>K.</i>	for Company.
<i>B.</i> or <i>Bay.</i>	for Bavarian.

A second pattern of identity disc (Fig. 2) was introduced in September, 1915. The disc is of zinc, oval in shape, and measures $2\frac{3}{4}$ inches by 2 inches.

As soon as a man joins a dépôt unit, the upper portion of his identity disc is stamped with the following particulars :—

- (1.) Christian name and surname.
- (2.) Last residence (in large towns, the street and number is added).
- (3.) Date of birth.
- (4.) Dépôt unit.
- (5.) Company, squadron or battery (at the dépôt).
- (6.) Regimental number (at the dépôt).

When the man is drafted to a unit in the field, the following information is added on the lower portion of the identity disc :—

- (1.) Unit.
- (2.) Company, squadron or battery.
- (3.) Regimental number (in his company, &c.).

The markings of the dépôt unit are not struck out.

When a man is transferred from one unit in the field to another unit, the markings of the old unit are struck out and the new markings inserted below.

In November, 1916, a third pattern of identity disc was introduced. This pattern (Fig. 3) is similar in shape to the second pattern, but the disc is divided into two halves, upper and lower, by a perforated line. Each half bears identical markings; the name, address and dépôt unit are marked on the front, and the field unit on the back. When a man is killed, the lower half of his identity disc is broken off and forwarded to Germany, the upper half being buried with the body.

(c.) **The pay book** (*Soldbuch*) forms the best means of identifying a prisoner or dead German.

The pay book is a small book $5\frac{1}{2}$ " by $3\frac{1}{2}$ ", with a brown paper cover marked :—

" *Soldbuch für den*.....
Nr. der Stammrolle.".....

on which is written the man's name and regimental number.

The book contains the following particulars :—

- (1.) Name in full
- Date of birth.....
- Place of birth
- District
- Province (Prussia, Bavaria, Saxony, &c.).....
- (2.) Parents'
 - (a) Profession
 - (b) & (c) Names in full.....
 - (d) Residence
 - (e) District
- (3.) Religion.....
- (4.) Profession or trade
- (5.) Married to.....
 - Wife's residence
 - District
 - Number of children.....

- (6.) Date of first joining the Standing Army
 Unit
 Date of being called up for active service.....
 Unit
 (7.) Medals and decorations
 (8.) Description
 Measurements of foot.....

This page is usually stamped with the regimental stamp.

Then follows a statement of the daily rate of pay to which the man is entitled, and a record of the payments which have been made to him.

The book also records the number of times the man has been inoculated.

The private soldier in the German Army is known generally as *Gemeiner* and officially as *Soldat* or *Infanterist*. Technically, however, the private is designated in his pay book according to the arm or unit to which he belongs as follows:—

<i>Schütze</i>	..	..	= Private in a <i>Schützen</i> regiment or battalion, or any machine gun unit.
<i>Jäger</i>	..	..	= Private in a <i>Jäger</i> battalion.
<i>Gardist</i>	..	..	= " " Foot Guards regiment.
<i>Grenadier</i>	..	..	= " " Grenadier regiment or battalion.
<i>Füsilier</i>	..	..	= " " Fusilier regiment or battalion.
<i>Musketier</i>	..	..	= " " Line infantry regiment.
<i>Pionier</i>	..	..	= Sapper.
<i>Kanonier</i>	..	..	= Gunner.
<i>Fahrer</i>	..	..	= Driver.

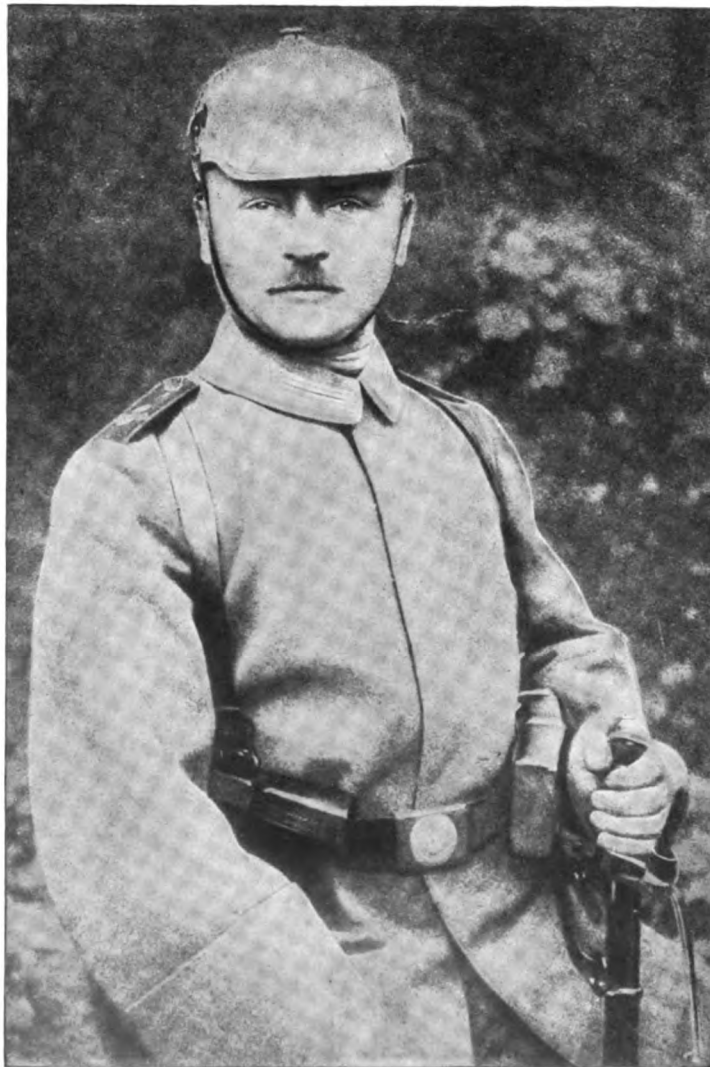
Cavalry soldiers are designated *Kürassier*, *Dragoner*, *Husar*, *Ulan*, &c., according to their regiment.

The above terms only apply to "Active" soldiers. The other categories are officially designated as "*Reservist*," "*Ersatz-Reservist*," "*Wehrmann*," "*Landsturmmann*," &c.

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To face page 113.]



THE NEW FIELD SERVICE JACKET.

A man of the Guard Field Artillery wearing the new field service jacket, helmet with cover but without ball, and chin strap instead of chin chain.

(4982)

APPENDIX A.

THE NEW GERMAN FIELD SERVICE UNIFORM.

Although the new uniform has not yet (January, 1917) been definitely identified on the front, it may be anticipated that it will shortly make its appearance, and the following notes are issued with a view to assisting officers in identifying the various units when clothed in the new uniform.

I.—SUMMARY OF CHANGES.

Certain changes affecting the uniforms of the German Army in peace and war have recently been published, and may be briefly summarized as follows:—

- (a.) The abolition of the old "dark blue" peace uniform (except in the case of the full dress of the Gardes du Corps, Guard Cuirassiers and certain Hussar regiments) and the substitution of a new field-grey (grey-green) uniform for all arms, for wear in time of peace.
- (b.) The introduction of a new universal pattern field service jacket (*Bluse*) of field-grey (grey-green) cloth for all arms and ranks, for wear on field service.
- (c.) The introduction of a field-grey greatcoat of universal pattern for all arms and ranks.
- (d.) The introduction of a field-grey peaked cap of universal pattern for all arms.
- (e.) The abolition of the special grey-green field service uniform for machine-gun batteries; all machine-gun units will wear the uniform of the unit to which they are allotted.

The regulations referred to deal only with Prussian troops, and no information is yet available concerning the changes in the uniforms of Bavarian, Saxon and Württemberg troops.

II.—DESCRIPTION OF NEW FIELD SERVICE UNIFORM.

(a.) **Jacket** (*see* Plate 3).—The field service jacket (*Bluse*) of universal pattern for all arms and ranks is shown in the Plate, and consists of a loose-fitting jacket of field-grey (grey-green) cloth, fastened down the front by hooks; turned-back cuffs of the same material as the jacket; stand and fall collar of special field-grey (grey-green) cloth used for badges (*Abzeichentuch*); shoulder straps of various materials and colours (*see* below), fastened by dull metal buttons bearing a crown; side pockets closed by similar buttons. The collar patches worn by certain regiments (Guards, Grenadiers, Fusiliers, and certain units of the Communication Troops) are shown in paragraphs II.d and III.A.

(b.) **Shoulder straps**.—There are considerable alterations to the shoulder straps of the jacket and greatcoat of the field service uniform; the particulars of the colourings of shoulder straps are summarized in the following table. It will be observed that each arm or branch of the service can at once be distinguished by the colour of the cloth of which the strap is made, except in the case of *Ulanen* and Horse and Field Artillery, for both of which it is scarlet.

Arm, &c.	Shoulder straps.		
	Cloth.	Edging.	Badge.
Infantry	Field-grey..	White (1) ..	Red.
<i>Jäger and Schützen</i>	Grey-green ..	Light green (2) ..	Red.
Cavalry—			
Cuirassiers	White	As at present* ..	Golden yellow (3).
Dragoons	Cornflower-blue ..	As at present* (4) ..	Red (5).
Hussars	Cords of the ..	same colours as at ..	Golden yellow (6) or white cloth.
Lancers (7)	Scarlet	As at present* (8) ..	Lemon-yellow.
<i>Jäger zu Pferde</i>	Light green ..	As at present* (9) ..	Red (10).
Artillery—			
Horse and field	Scarlet	Nil (11)	Lemon-yellow.
Foot	Golden yellow ..	Nil	Red.
Pioneers	Black	Scarlet	Red.
Communication Troops..	Light grey ..	Nil	Red.
Train—			
Train detachments	Cyanine-blue ..	Nil	Red.
Stretcher bearers	Crimson	Nil	Yellow.
Sick attendants, &c. ..	Dark blue ..	Cornflower-blue ..	Yellow.

(1.) Except 2nd Foot Guards, 2nd Grenadier Guards and 8th Grenadiers, which are scarlet; 3rd Foot Guards, 3rd Grenadier Guards, Guard Fusiliers, and 7th and 11th Grenadiers, which are lemon-yellow; 4th Foot Guards, 4th Grenadier Guards, and 145th Infantry Regiment, which are light blue; and the 141st Infantry Regiment, which is light green.

(2.) Except Guard *Schützen* Battalion, which is black.

(3.) Crimson for 2nd Cuirassiers.

(4.) Except for 22nd Dragoons, which is now black only.

(5.) Except for 3rd Horse Grenadiers, 7th and 15th Dragoons, which are pink, and 11th and 12th Dragoons, which are crimson.

(6.) White for 4th, 6th, 7th, 9th, 10th and 17th Hussars; remainder golden yellow. The 1st Body Hussars now wear the Imperial Monogram.

(7.) *Ulanen* now wear angular shoulder straps instead of the former special oval shape.

(8.) Except that the scarlet edgings of the 2nd Guard *Ulanen* and 2nd and 6th *Ulanen* are abolished and the edging of the 13th *Ulanen* is now light blue.

(9.) Those of the more recently formed 9th, 10th, 11th, 12th and 13th Regiments are identical with those of the 2nd, 3rd, 4th, 5th and 6th Regiments respectively, while that of the 7th Regiment is pink.

(10.) Except for 1st Regiment, which is lemon-yellow, and 7th, which is pink.

(11.) Except for 1st Guard Field Artillery Regiment, which is white, 3rd Guard Field Artillery Regiment, lemon-yellow, and 4th Guard Field Artillery Regiment, light blue.

(c.) **Shoulder cords (officers').**—"Field shoulder cords" will be worn by officers on the jacket (*Bluse*) and greatcoat; for officers below the rank of General they have a uniform width of 1½ inches without any stiffening; they consist of a cloth strap of various colours, corresponding to those of the

* The colours vary and are too numerous to quote here.

shoulder straps of the rank and file (in the Infantry and *Jäger* the colours correspond to those of the edging of the shoulder straps of the rank and file). This strap forms a foundation for the cords and badges, which are "dull" and of a size corresponding to the present size for captains.

The only exceptions to the above are as follows:—

1st Foot Guards	the cloth strap is edged with silver lace.
109th Body Grenadiers	" " " " " " " "
Gardes du Corps	" " " " " " " "
19th Dragoons	" " " " " " " "
1st Flying Battalion	" " " " " " white.
2nd " "	" " " " " " scarlet.
3rd " "	" " " " " " lemon-yellow.
4th " "	" " " " " " light blue.

(d.) **Collar patches of all arms except Infantry.**—The details of the collar patches of Infantry regiments and *Jäger* battalions have been shown for convenience in the table on page 116; the remainder are shown in the following table:—

Unit, &c.	Collar patches: grey.		
	Shape.	Centre.	Upper and lower stripes.
<i>Cavalry</i> —			
Gardes du Corps	Double ..	Scarlet ..	White.
Guard Cuirassiers	" ..	Cornflower-blue ..	"
1st Guard Dragoons	" ..	Scarlet ..	Yellow.
2nd " "	" ..	" ..	White.
Body Guard Hussars	" ..	" ..	Yellow.
1st Guard <i>Ulanen</i>	" ..	" ..	White.
2nd " "	" ..	" ..	Yellow.
3rd " "	" ..	Golden yellow ..	White.
<i>Artillery</i> —			
1st—4th Guard Field Artillery Regiments	" ..	Black ..	Yellow.
Guard Foot Artillery Regiment	" ..	" ..	"
<i>Pioneers</i> —			
Guard Pioneers.. .. .	" ..	" ..	White.
<i>Communication Troops</i> —			
All except Telegraph Battalions 2—6,			
Airship Battalions 3—5, and Flying			
Battalions 1—4	" ..	" ..	"
Flying Battalions 1—4	Single ..	Nil ..	"
<i>Train</i> —			
1st and 2nd Guard Train Detachments ..	Double ..	Cyanine-blue ..	"
Guard Stretcher Bearers	" ..	Crimson ..	"

(e.) **Trousers and pantaloons.**—No alterations to these have been published, except that officers' pantaloons must correspond in width and cut to those of the rank and file.

(f.) **Helmets, etc.**—Helmets and lance caps will be fitted with removable spikes or balls or upper portion, which will not be taken into the field. Chin straps will replace chin chains for wear with helmets, shakos, bushies and lance caps (*see* Plate facing page 113).

(g.) **Field service cap.**—A new field service cap has been introduced for officers (details have not yet been published) and the field service cap for the rank and file will, in future, be a peaked cap of field-grey (grey-green) cloth. There are no alterations to the colours of the cap bands (*see* page 107), but a field-grey (grey-green) band is worn in the field to cover the coloured cap band.

(h.) **Greatcoat.**—A universal pattern greatcoat of field-grey cloth is being introduced for mounted and dismounted branches of all arms. The polished buttons are being replaced by dull metal buttons. The shoulder straps for Infantry and *Jäger* will be made of the same cloth as the greatcoat and will have the same edgings as the shoulder straps of the jacket (*Bluse*); for all other arms the shoulder straps are identical with those on the jacket (*Bluse*).

(i.) **Leather Equipment.**—The following changes have been introduced :—

- (a) A field service belt (*Feldkoppel*) of dark brown grained leather for officers instead of the old officer's waist belt (*Feldbinde*). Sashes will no longer be worn in the field by adjutants, who will then, like all other officers, wear the field service belt (*Feldkoppel*).
- (b) Black laced boots and gaiters for officers.
- (c) A universal pattern of cavalry boot.
- (d) Leather equipment, boots, and cases for field glasses, pistols and maps must be blacked. (There is no change in the colour of saddlery and harness.)

III.—DETAILS OF DISTINGUISHING MARKS.

A.—Infantry.

1. INFANTRY OF THE GUARD AND OF THE LINE.

Jacket (*Bluse*).

Cloth—Field-grey.

Collar—Stand and fall.

Shoulder straps—Field-grey, edging as shown below.

Badge on shoulder strap—Red.

Buttons on shoulder straps and pockets—Dull with crown, material as shown below.

Unit.	Shoulder straps : field-grey.	Collar patches: Grey.			Buttons.
	Edging.	Shape.	Centre.	Upper and lower stripes.	
1st Foot Guards	White	Double ..	Scarlet ..	White ..	Nickel.
2nd " "	Scarlet	" ..	" ..	" ..	Tombak.*
3rd " "	Lemon-yellow ..	" ..	" ..	" ..	"
4th " "	Light blue ..	" ..	" ..	" ..	"
5th " "	White	Old Prussian ..	" ..	" ..	Nickel.
1st Guard Grenadiers	"	Double ..	Scarlet ..	" ..	Tombak.
2nd " "	Scarlet	" ..	" ..	" ..	"
3rd " "	Lemon-yellow ..	" ..	" ..	" ..	"
4th " "	Light blue ..	" ..	" ..	" ..	"
5th " "	White	Old Prussian ..	" ..	Yellow ..	"
Guard Fusiliers	Lemon-yellow ..	Double ..	Scarlet ..	White ..	Nickel.
Grenadier Regiments, Nos. 1 to 6..	White	Single ..	" ..	" ..	Tombak.
7th Grenadiers	Lemon-yellow ..	" ..	" ..	Yellow ..	"
8th " "	Scarlet	" ..	" ..	White ..	"
11th " "	Lemon-yellow ..	" ..	" ..	" ..	"
80th Fusiliers	White	Old Prussian ..	" ..	" ..	"
109th Body Grenadiers	"	Double ..	Scarlet ..	White ..	Nickel.
114th Infantry Regiment	Light green ..	" ..	" ..	" ..	Tombak.
145th " "	Light blue ..	" ..	" ..	" ..	"
All other Prussian Line Infantry Regiments.	White	" ..	" ..	" ..	"

* Tombak is an alloy of zinc and copper; its colour is that of reddish brass.

2. JÄGER AND SCHÜTZEN.

Jacket (*Bluse*).

Cloth—Grey-green.

Collar—Stand and fall.

Shoulder straps—Grey-green, edging as shown.

Badge on shoulder strap—Red.

Buttons on shoulder straps and pockets—Dull with crown, tombak.

Unit.	Shoulder straps : Grey-green.		Collar patches : Grey.			Buttous.
	Edging.		Shape.	Centre.	Upper and lower stripes.	
Guard <i>Jäger</i> Battalion	Light green ..	Double ..	Light green.	Yellow ..	Tombak.	
Guard <i>Schützen</i> Battalion	Black	"	Black ..	" ..	" ..	
All other Prussian <i>Jäger</i> Battalions	Light green ..	"	" ..	" ..	" ..	

B.—Cavalry.

Jacket.—All the special pattern tunics (*Attila*, *Ulanke*, &c.) of the cavalry have been abolished for field service, and cavalry will wear the universal pattern jacket (*Bluse*) of field-grey (grey-green) for *Jäger zu Pferde* cloth, with stand and fall collar, as described in paragraph II.g (see Plate 3).

Shoulder Straps.—These are no longer of field-grey (grey-green) cloth, but each branch of the cavalry has its own distinctive colour for the cloth of the shoulder strap, as shown in the table in paragraph II.b.

It should be noted that the shoulder straps of *Ulanen* Regiments are now angular instead of the former special oval shape.

Collar Patches.—See table in paragraph II.d.

C.—Artillery.

Jacket.—Universal pattern jacket (*Bluse*) of field-grey cloth, with stand and fall collar, as described in paragraph II.a.

Shoulder Straps.—These are no longer of field-grey cloth, but are of scarlet cloth for horse and field, and golden-yellow cloth for Foot Artillery, as described in the table in paragraph II.b.

The badges for Foot Artillery units are altered by the addition of two crossed grenades, with the numeral of the pre-ent pattern shoulder strap beneath them.

Collar Patches.—See table in paragraph II.d.

D.—Pioneers, Communication Troops and Train.

Jacket.—Universal pattern jacket (*Bluse*) of field-grey cloth, with stand and fall collar, as described in paragraph II.a.

Shoulder Straps.—See table in paragraph II.b.

Collar Patches.—See table in paragraph II.d.

E.—Medical and Veterinary Officers.

The changes in officers' uniforms apply also to medical and veterinary officers, whose shoulder straps, however, remain unchanged.

F.—Landsturm Formations

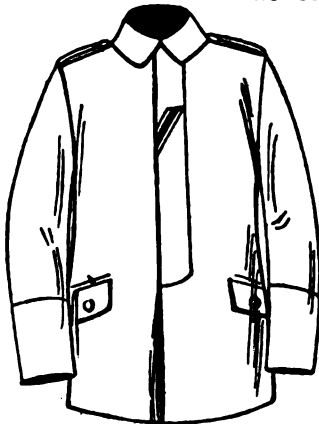
The regulations lay down that the existing distinguishing badges, &c., for Landsturm formations will remain in force during the war.

These distinctions consist of shoulder straps on the tunic, jacket (*Bluse*), or *Litewka* and greatcoat, and numerals on the collar of these articles of uniform.

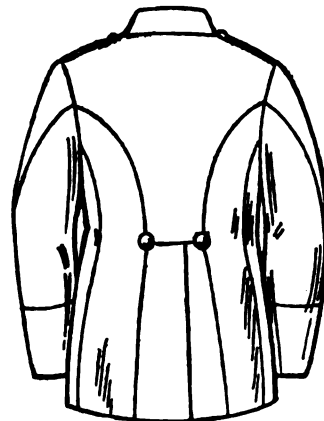
Shoulder Straps.—These are of different colours to distinguish the arms of the service, and bear no numeral. The colours are :—

Infantry	..	..	..	..	..	..	..	Blue.
Pioneers	..	..	..	..	..	..	..	Black.
Field Artillery..	..	..	..	..	..	..	..	Scarlet.
Foot Artillery..	..	..	..	..	..	..	..	Yellow.

Numerals on Collar.—These are worn by men of the arms mentioned above on both sides of the collar of the tunic, jacket (*Bluse*), or *Litewka* and greatcoat. They are made of dull brass, and consist of the Army-Corps number in Roman figures (G for Guard Corps) with the number of the battalion, &c., below in Arabic figures, the latter running consecutively from 1 upwards in each Army Corps, and including *Landsturm Ersatz* formations.

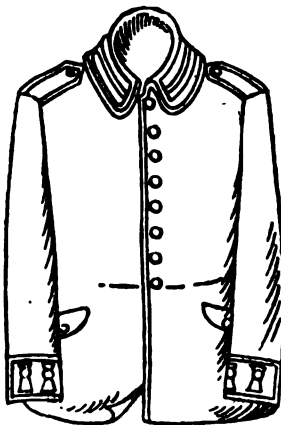


Front View.

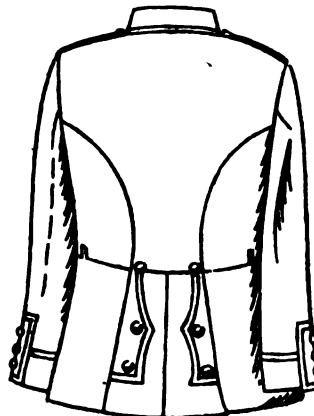


Back View.

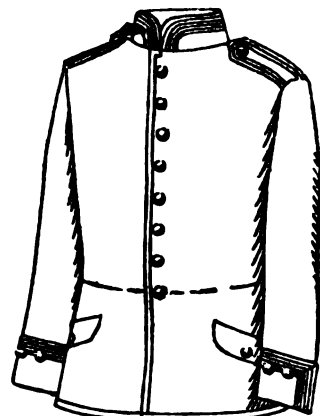
Field Service Tunics, &c.



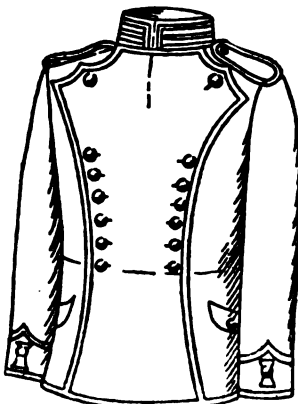
Front View.
(4th Gd. *Zeiter* Rgt.)
Tunic with turned down collar.



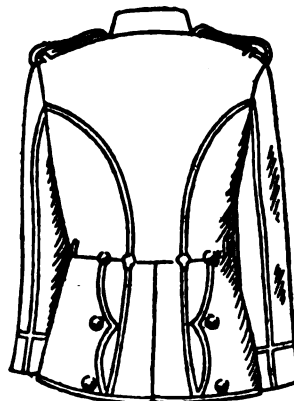
Back View.
(Inf. Rgt.)



Tunic with stand-up collar
(8th Cuir. Rgt.)



Front View.
(2nd Gd. *Zeiter* Rgt.)

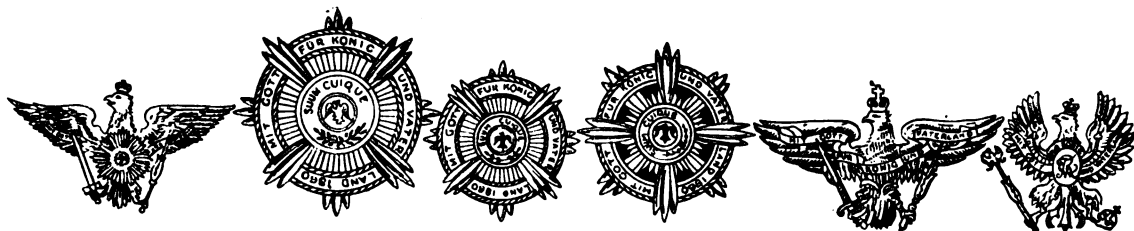


Back View.
(2nd Gd. *Zeiter* Rgt.)



(12th Hus. Rgt.)

Helmet and Shako Ornaments.



Troops of the Guard.

G. du Corps and
G. Cuirassiers.

Body Gd.
Hussars.

G. Jäger, Train
and Schützen.

Gren. R. 2, 7, 8.
Drag. No. 1.
Horse Gren. R. No. 3.
(Silver.)

Old Prussian
Eagle.



Eagle worn by
Line Regts.

N.C.O.'s Schools.

Drag. Regts.

Hus. Regts. 1
and 2.

Hus. Regt. 7.

Hus. Regt. 17.

Bavaria.



Saxony.

Württemberg.

Baden No. 109
Gren. R.

Baden.

Hesse.

Meckl.-Schwerin.



Meckl.-Str. litz.

Oldenburg.

Saxe Weimar.

Brunswick.

Brunswick.
Inf. Reg. 92, III Battn.

Anhalt.



Saxon Duchies.

Schwarzburg.

Reuss.



Infantry Private in Marching Order.

The man belongs to the 239th Res. Infantry Regt., as shown by the number on helmet cover and shoulder strap. The shoulder strap has a coloured strip as a further distinguishing mark; this is peculiar to some Divisions and is not regulation.

The cuff is of the new turned back pattern instead of the older Brandenburg type.

The bayonet is shorter than the usual pattern.

The photograph shows the normal way of carrying the pack, greatcoat, ammunition pouches and entrenching tool, but the man is not carrying the tent-square which is normally strapped above the greatcoat.



Landsturm Infantry Private in Marching Order.

The man belongs to Landsturm Infantry Battalion XI/22, as shown by the copper numerals on his collar. The helmet cover also bears the number 22, and the Landsturm cross. The rifle and bayonet are of an old pattern, but otherwise the equipment is the same as that of infantry of the line.



Infantry Uniform.

A private of the 28th Inf. Regt. or 28th Res. Inf. Regt., as shown by the number on the shoulder strap. The tunic buttons are embossed with the Prussian crown; the shoulder-strap button, which bears the number 1, shows that the wearer belongs to the 1st company of his regiment.

The red band of the forage cap is concealed by a strip of grey cloth. The upper cockade is the imperial one, black, white and red; the lower cockade is black and white, the Prussian colours.

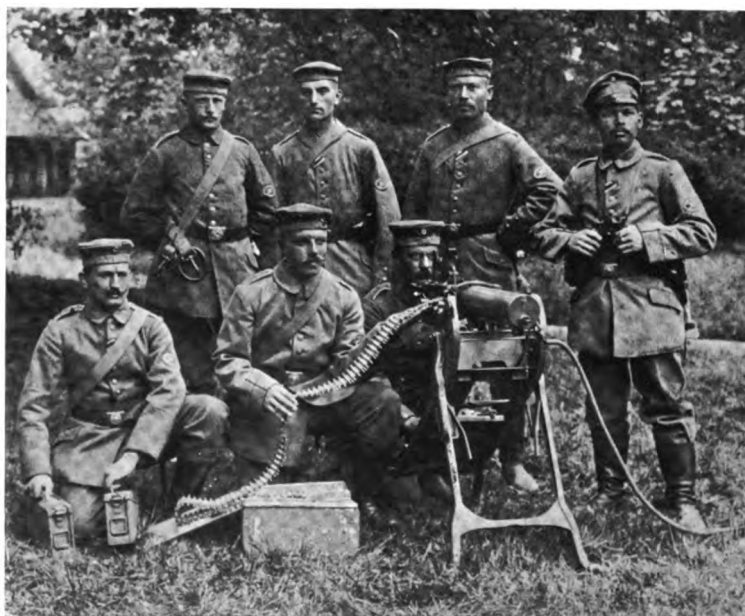


Infantry Uniform.

A *Vizefeldwebel* belonging to the grenadier battalion of the 109th Res. Inf. Regt. On the collar he wears grenadier braid patches (*Lütz-n*), as well as the lace and button which are the rank badges of a *Feldwebel* or *Vizefeldwebel*.

The forage cap is of the peaked type hitherto worn only by officers and non-commissioned officers. The red band is covered by a grey strip. The upper cockade on the cap is the imperial one, black, white and red. The lower cockade is red and yellow, the Baden colours.

The non-commissioned officer is wearing the ribbon of the Iron Cross, 2nd Class.



Machine Gun Unit.

A gun crew belonging to a machine gun marksman company (*M.G. Scharfschützen-Kompagnie*). All the men wear the machine gun marksman's badge on the left sleeve.

The gun commander, on the right, is an *Unteroffizier*, as he has lace on his collar and wears a peaked cap. The second man from the right is a lance-corporal (*Gefreiter*), and wears a button on each side of the collar.

The State (lower) cockade on the forage-cap is hidden in each case by the grey cap band cover.

The man on the left is wearing turn over cuffs of the new pattern.

The machine gun is of the ordinary '08 pattern with telescopic sight.

The cross-belts, which are peculiar to machine gunners, are worn in action by the detachments; they serve to carry the equipment.



Field Artillery.

The man on the right is a gunner, and the man on the left is a driver of the field artillery. The helmet has a ball instead of a spike. The gunner is armed with a rifle* and bayonet, and wears the infantry belt.

The driver is armed with sword and revolver and wears a belt of the cavalry pattern.

* Gunners are normally armed with the carbine.



Cavalry.

Two corporals (*Unteroffiziere*) of the 20th *Ulanen* Regiment, as seen by the regimental monogram on the shoulder strap; they wear the double-breasted lancer tunic with pointed cuffs.

The rank is denoted by the lace on collar and cuffs.

The lower cockade of the forage cap bears the Württemberg, colours, red and black.



Pioneer in Marching Order.

The man belongs to a field company of the 14th Pioneer Battalion, as shown by the number on helmet cover and shoulder strap.

The cuff is of the Swedish pattern, instead of the Brandenburg cuff worn by the infantry.

The pouches differ from those of the infantry, and the bayonet has a saw-back.

A long-handled spade is carried in place of the short infantry entrenching tool.

The tent-square can be seen strapped above the greatcoat and pack.



Pioneers.

A group of pioneers belonging to a field company of the 8th Pioneer Battalion, as shown by the black cap band and number on the shoulder strap.

The man on the extreme left is a lance-corporal (*Gefreiter*) as shown by the button on his collar.

The left-hand man in each row is wearing the new field service jacket (*Bluse*) with turn-over cuffs, black shoulder straps, and fastened with hooks and eyes instead of buttons. There is a black piping down the seam of the trousers.

The men are seated in one of the steel half-pontoons which form part of the equipment of a Divisional bridging train.

Identity Discs.

FIG. 1.
(1914 pattern.)

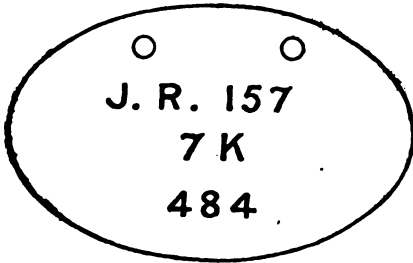
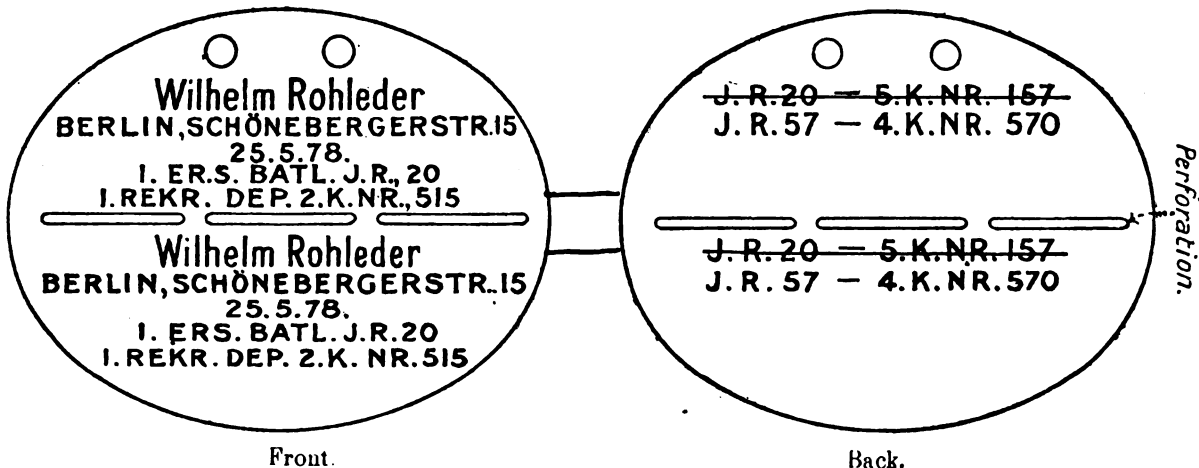


FIG. 2.
(1915 pattern.)































FIG. 3.
(1916 pattern.)



APPENDIX B.

Conventional Signs used to represent Artillery Units, &c.

Conventional sign.	German abbreviation.	English equivalent.
	<i>M.G.</i>	Machine gun.
	<i>3·7 cm. Rev. K.</i>	3·7 cm. revolver-gun.
	<i>5·7 cm. belg. K.</i>	5·7 cm. Belgian gun.
	<i>F.K. 96 n/A.</i>	7·7 cm. field gun.
	<i>l. F.H.</i>	10·5 cm. light field howitzer.
	<i>9 cm. K. 73/88.</i>	9 cm. field gun (1873/1898 pattern).
	<i>9 cm. franz. K...</i>	90 and 95 mm. French gun.
	<i>Flak.</i>	Anti-aircraft gun.
	<i>10 cm. K.</i>	10-cm. gun (old pattern).
	<i>10 cm. K. 04 oder 14</i>	10-cm. gun, 1904 or 1914 pattern.
	<i>12 cm. K.</i>	12-cm. gun.
	<i>12 cm. belg. K.</i>	12-cm. Belgian gun.
	<i>13 cm. K.</i>	13-cm. gun.
	<i>15 cm. R.K.</i>	15-cm. gun with chase rings.
	<i>lg. 15 cm. K.</i>	15-cm. long gun.
	<i>15 cm. K. (i.S.L.)</i>	15-cm. gun with overhead shield.
	<i>15 cm. russ. K.</i>	15-cm. Russian gun.
	<i>s. F.H.</i>	15-cm. heavy field howitzer.
	<i>s. F.H. 02 oder 13</i>	Ditto (1902 or 1913 pattern).
	<i>21 cm. Mrs.</i>	21 cm. mortar (old pattern).
	<i>Mrs.</i>	Ditto (new pattern).
	<i>20·3 cm. russ. Mrs.</i>	20·3 cm. Russian mortar.
	<i>30·5 cm. Mrs.</i>	30·5 cm. mortar.
	<i>42 cm. Mrs.</i>	42 cm. mortar on carriage.
	"	Ditto on platform bed.
	<i>l. M.W...</i>	Light <i>Minenwerfer</i> .
	<i>s. M.W.</i>	Heavy <i>Minenwerfer</i> .
	<i>l. M.K.</i>	Light ammunition column.

APPENDIX C.

New German Field Gun.

Some of the more recently formed batteries have been equipped with a new field gun (*K.i.H.*).

The main features of the new gun are its increased range and muzzle velocity. In order to obtain these the new gun has been made 8 calibres (*i.e.* 2 feet) longer than the old one, and is mounted on the light field howitzer carriage, so as to allow for the increased elevation. The new gun is known as "*K.i.H.*" (*Kanone in Haubitzelafette*); it has the same calibre and fires the same projectiles as the old field gun. The recoil buffer and running-out springs have been strengthened to withstand the increased strain on the carriage. The sights are graduated in degrees (0° to 38°) as well as in metres (150 to 8,200 metres).

The following table shows the main points in which the new field gun differs from the old one:—

	Old Gun (96n/A).	New Gun (K.i.H.).
Length	27·3 calibres.	35 calibres.
Weight in action..	19·3 cwt.	25½ cwt.
Limits of elevation	—12°, +16°.	—10°, +38°.
Muzzle velocity	1,526 f.s.	1,601 f.s.

A circular platform, weighing 2·8 cwt., is placed underneath the wheels when in action. This ensures steadiness in firing, and allows of a wide arc of traverse without disturbing the level of the wheels.

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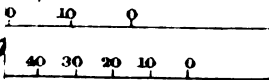
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